

***United States Court of Appeals  
for the Second Circuit***



**APPELLEE'S BRIEF**





75-7621  
75-7645

No. 75-7621

No. 75-7645

IN THE  
**United States Court of Appeals**  
FOR THE SECOND CIRCUIT

PLANTRONICS, INC.,

*Plaintiff-Appellant  
and Cross-Appellee,*

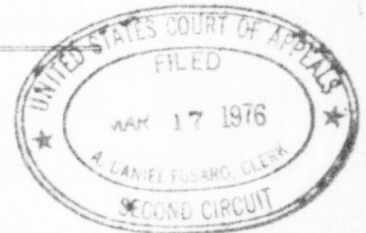
v.

ROANWELL CORPORATION,

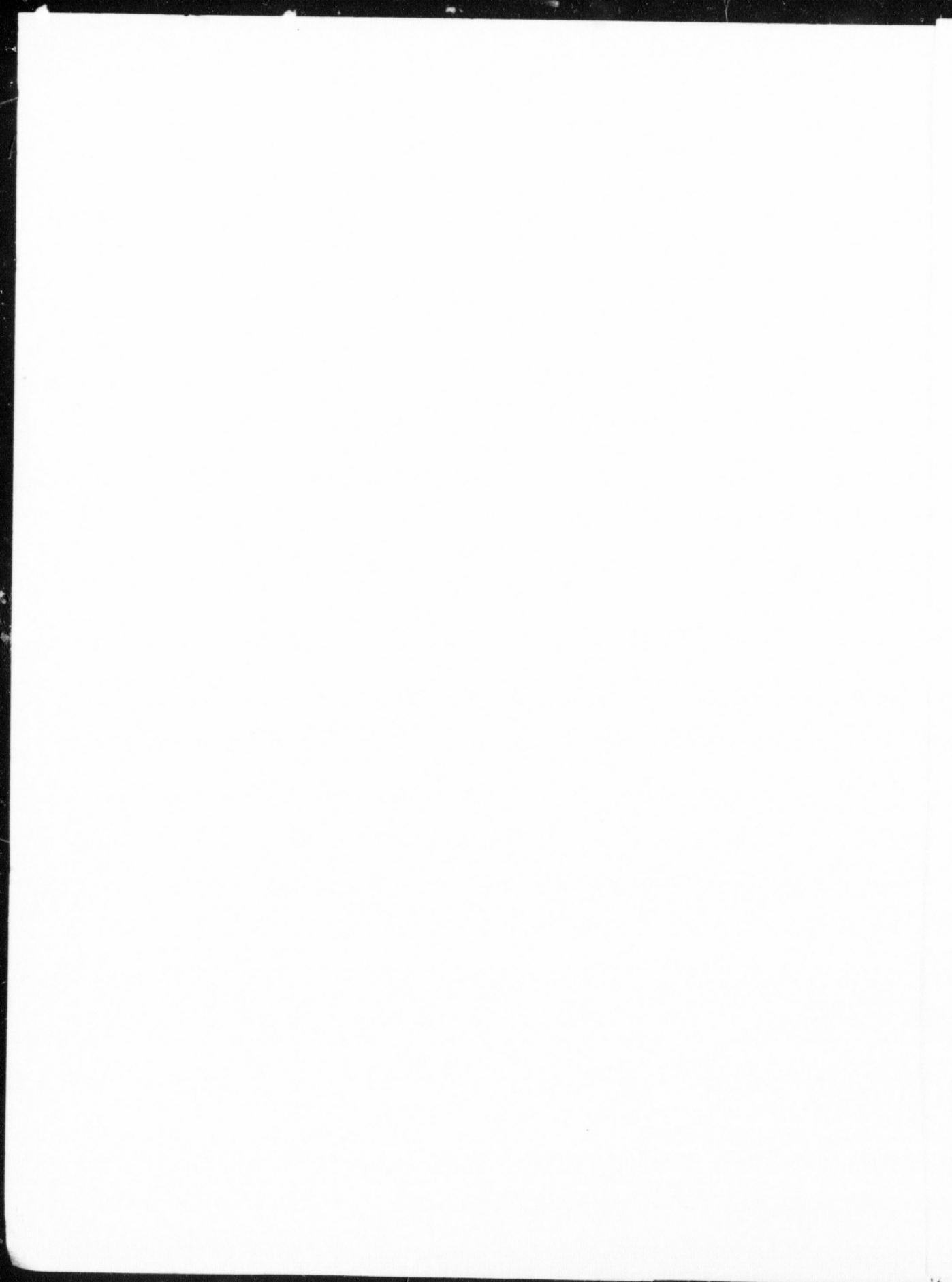
*Defendant-Appellee  
and Cross-Appellant.*

APPEAL FROM THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF NEW YORK

**BRIEF FOR DEFENDANT-APPELLEE**



Charles W. Bradley, Esq.  
Lester W. Clark, Esq.  
Cooper, Dunham, Clark, Griffin,  
& Moran  
30 Rockefeller Plaza  
New York, New York 10020  
(212) 977-9550  
Attorneys for Defendant-Appellee



# TABLE OF CONTENTS

	Page
Statement Of Issues Presented For Review . . . . .	1
Statement Of The Case	
Nature of the Case . . . . .	2
Prior Proceedings . . . . .	3
Patents In Suit	
Larkin Patent 3,184,556 . . . . .	4
Hutchings Patent 3,548,118 . . . . .	5
Hutchings Design Patent 218,173 . . . . .	5
Accused Devices . . . . .	6
Argument . . . . .	8
Hutchings Patent 3,548,118	
Background . . . . .	8
Obviousness . . . . .	12
Secondary Factors . . . . .	17
Hutchings Design Patent 218,173	
Obviousness . . . . .	29
Non-Ornamental Nature . . . . .	31
Infringement . . . . .	33
Larkin Patent 3,184,556	
Background . . . . .	34
Larkin Invention . . . . .	40
Anticipation . . . . .	40
Obviousness . . . . .	47
Secondary Factors . . . . .	54
Enforceability . . . . .	66
Conclusion . . . . .	75

## TABLE OF AUTHORITIES

	Page
Cases:	
<u>Anderson's-Black Rock v. Pavement Co.</u> , 396 U.S. 57 (1969) . . . . .	54
<u>A&amp;P Tea Co. v. Supermarket Corp.</u> , 340 U.S. 147 (1950) . . . . .	54
<u>Barofsky v. General Electric Corporation</u> , 396 F.2d 340 (9 Cir. 1968), <u>cert. denied</u> 393 U.S. 103 (1969) . . . . .	33
<u>B.B. Chemical Co. v. Ellis</u> , 314 U.S. 495 (1942) . . . . .	74
<u>Beckman Instruments v. Chemtronics, Inc.</u> , 439 F.2d 1969 (5 Cir. 1970), <u>cert. denied</u> 400 U.S. 956 (1970) . . . . .	39
<u>Bently v. Sunset House Distributing Corp.</u> , 359 F.2d 140 (9 Cir. 1966) . . . . .	33
<u>Blisscraft of Hollywood v. United Plastics Company</u> , 189 F.Supp. 333 (SDNY 1960), <u>aff'd</u> 294 F.2d 694 (2 Cir. 1961) . . . . .	31-2
<u>Canadian Ingersoll-Rand Co. v. Peterson Prod. of San Mateo</u> , 223 F.Supp. 803 (D.C. Cal. 1963) . . . . .	42
<u>Carter-Wallace, Inc. v. Davis-Edwards Pharmaceutical Corp.</u> , 443 F.2d 867 (2 Cir. 1971) . . . . .	39
<u>Chromalloy American Corp. v. Alloy Surfaces Co.</u> , 339 F.Supp. 859 (D.C. Del. 1972) . . . . .	72
<u>David &amp; David, Inc. v. Meyerson</u> , 388 F.2d 292 (2 Cir. 1968) . . . . .	13
<u>East Chicago Machine Tool Corp. v. Stone Container Corp.</u> , 181 USPQ 744 (D.C. Ill. 1974) (not otherwise reported) . . . . .	73
<u>Edgebury v. Stevens</u> , 1 Web. D.C. 35 (1691) . . . . .	43

Cases (Cont'd):	Page
<u>Electric Cable Co. v. Edison Co.</u> , 292 U.S. 69 (1934) . . . . .	42
<u>Formal Fashions, Inc. v. Braiman Bows, Inc.</u> , 369 F.2d 536 (2 Cir. 1966) . . . . .	16, 23, 26, 53, 54, 55
<u>Glikin v. Smith</u> , 269 F.2d 641 (5 Cir. 1959), <u>cert. denied</u> 361 U.S. 915 (1959) . . . . .	37
<u>Graham v. John Deere Co.</u> , 383 U.S. 1 (1966) . . . . .	13, 17, 24
<u>Hadco Products, Inc. v. Walter Kidde Company</u> , 462 F.2d 1265 (3 Cir. 1972), <u>cert. denied</u> 409 U.S. 1023 (1972) . . . . .	30
<u>Hubner v. Sunbeam Corp.</u> , 320 F.Supp. 298 (SDNY 1970), <u>aff'd</u> 450 F.2d 878 (2 Cir. 1971) . . . . .	41
<u>Hygienic Specialties Co. v. H.B. Salzman, Inc.</u> , 302 F.2d 614 (2 Cir. 1962) . . . . .	31
<u>Julie Research Laboratories, Inc. v. Guildline Inst., Inc.</u> , 501 F.2d 1131 (2 Cir. 1974) . . . . .	16, 26, 53, 54
<u>Kahn v. Dynamic Corp. of America</u> , 508 F.2d 939 (2 Cir. 1974), <u>cert. denied</u> 421 U.S. 930 (1975) . . . . .	16, 53
<u>Kearney &amp; Trecker Corp. v. Cincinnati Milacron, Inc.</u> , 184 USPQ 134 (D.C. Ohio 1974) (not otherwise reported) . . . . .	74
<u>Keystone Driller Co. v. General Excavator Co.</u> , 290 U.S. 240 (1933) . . . . .	72
<u>S.H. Kress &amp; Company v. Agnides</u> , 246 F.2d 718 (4 Cir. 1957) . . . . .	73
<u>Lancaster Colony Corp. v. Aldon Accessories, Ltd.</u> , 506 F.2d 1197 (2 Cir. 1974) . . . . .	30
<u>Lemelson v. Topper Corporation</u> , 450 F.2d 845 (2 Cir. 1971) . . . . .	16, 25, 63



Cases (Cont'd):	Page
<u>G.B. Lewis Company v. Gould Products, Inc.,</u> 436 F.2d 1176 (2 Cir. 1971) . . . . .	30
<u>Lorenz v. F.W. Woolworth Co.,</u> 305 F.2d 102 (2 Cir. 1962) . . . . .	64
<u>National Filters, Inc. v. Research Prod- ucts Corporation,</u> 384 F.2d 516 (5 Cir. 1967) . . . . .	44
<u>Nickels v. Ross,</u> 8 C.B. 679 (1849) . . . . .	43
<u>Pickering v. McCullough,</u> 104 U.S. 310 (1831) . . . . .	44
<u>Plantronics, Inc. v. Roanwell Corporation,</u> 403 F.Supp. 138 (SDNY 1975) . . . . .	3
<u>Plantronics, Inc. v. Roanwell Corporation,</u> 185 USPQ 505 (SDNY 1975) (not otherwise reported) . . . . .	4
<u>Precision Instruments Co. v. Automotive Co.,</u> 324 U.S. 806 (1945) . . . . .	73
<u>Preuss v. General Electric Co.,</u> 392 F.2d 29 (2 Cir. 1968) . . . . .	23, 54, 55, 65
<u>Rains v. Niaqua, Inc.,</u> 406 F.2d 275 (2 Cir. 1969) . . . . .	23, 25, 30, 55, 63
<u>Saxton Products, Inc. v. United States Telephone Co.,</u> 182 USPQ 608 (SDNY 1974) (not otherwise reported) . . . . .	72
<u>SCM Corporation v. Radio Corporation of America,</u> 318 F.Supp. 433 (SDNY 1970) . . . . .	39
<u>Shaw v. E.B.&amp;A.C. Whiting Company,</u> 417 F.2d 1097 (2 Cir. 1969) . . . . .	53
<u>Siemens A.G. v. Beltone Electronics Corp.,</u> 381 F.Supp. 57 (D.C. Ill. 1974) . . . . .	20
<u>Tri-Wall Containers, Inc. v. Continental Can Co.,</u> 323 F.Supp. 700 (SDNY 1971) . . . . .	41

## Cases (Cont'd):

Page

<u>United States v. Imperial Chemical Industries</u> , 105 F.Supp. 215 (SDNY 1952) . . . . .	72
<u>Vanity Fair Mills, Inc. v. Olga Company</u> , 510 F.2d 336 (2 Cir. 1975) . . . . .	25, 26, 63
<u>Walton v. Bateman</u> , 1 Web P.C. 615 (1842) . . . . .	43
<u>Western States Mach. Co. v. S.S. Hepworth</u> , 147 F.2d 345 (2 Cir. 1945), <u>cert. denied</u> 325 U.S. 873 (1944) . . . . .	44

## Statutes:

## Title 35, United States Code

§ 102 . . . . .	2, 40, 75
§ 103 . . . . .	1, 2, 3, 29, 48, 75
§ 171 . . . . .	2, 33

## Miscellaneous:

## British Patents Act, 1949

§ 1(1) . . . . .	44
§ 7 . . . . .	69
§ 16(2) . . . . .	43
§ 50 . . . . .	69

On the Law of PATENTS (9th ed. 1951)

by Terrell and Shelly . . . . .	43
---------------------------------	----

7



UNITED STATES COURT OF APPEALS

FOR THE SECOND CIRCUIT

No. 75-7621

No. 75-7645

---

PLANTRONICS, INC.,

Plaintiff-Appellant  
and Cross-Appellee,

v.

ROANWELL CORPORATION,

Defendant-Appellee  
and Cross-Appellant.

---

Appeal From The United States District Court  
For the Southern District of New York

---

BRIEF FOR APPELLEE ROANWELL CORPORATION

---

STATEMENT OF ISSUES PRESENTED FOR REVIEW

1. Whether the district court was correct in holding the inventions of Hutchings utility patent 3,548,113 and Hutchings design patent Des. 218,173 obvious in view of the prior art, and these patents consequently invalid under 35 USC 103;

2. Whether, contrary to the ruling of the district court, the design of Hutchings design patent Des. 218,173 is utilitarian and non-ornamental in nature, and this patent also invalid under 35 USC 171;

3. Whether, contrary to the ruling of the district court, the invention of Larkin patent 3,184,556 was anticipated by, or obvious in view of, the prior art, and this patent consequently invalid under 35 USC 102 or 103; and

4. Whether the district court erred in striking from the Answer the defense that the plaintiff is guilty of such unclean hands as to bar the relief it seeks in this suit, at least as to the Larkin patent in suit, by virtue of its fraudulent filing of a Larkin British patent application, after being advised by its patent attorney that a valid British patent was barred by statute, and by virtue of its concurrent action of predicated an anti-competitive exclusive license for Europe on this fraudulent British application -- so as to extend its monopoly for the invention of the Larkin patent in suit to Europe and to unlawfully restrict commerce in this and other countries.

#### STATEMENT OF THE CASE

Nature of the Case. This is a patent infringement suit based upon the following three U.S. patents owned by

plaintiff and charged to be infringed by defendant's R-70 and R-71 headsets:

1. Larkin patent 3,184,556, for a "Miniature Headset-Microphone Adapted For Use With A Mask", filed December 11, 1961, issued May 18, 1963; (Ex.App. 2)\*
2. Hutchings patent 3,548,118 for a "Self-Supporting Headset", filed July 3, 1969, issued December 15, 1970; (Ex.App. 7)
3. Hutchings design patent Des. 218,173 for a "Combined Microphone And Receiver Instrument", filed June 16, 1969, issued July 28, 1970. (Ex.App. 13)

Prior Proceedings. After a five-day bench trial, and briefs by both sides, the district court held the Larkin patent in suit to be valid and infringed, and the two Hutchings patents in suit to be invalid for obviousness under 35 USC 103. The district court's opinion is reported at 403 F.Supp. 138 (SDNY 1975). (Opinion, App. 1063)

Shortly before trial, plaintiff moved to strike paragraph 17 and a portion of paragraph 18 of the Answer, which asserted unenforceability of the patents in suit on the basis of plaintiff's conduct in fraudulently securing corresponding foreign patents, and granting licenses under these knowingly invalid patents. (App. 27)

This defense was principally directed to a fraudulent Larkin British patent application, and a restrictive exclusive

---

\* The two 8-1/2 x 11" Volumes of the Joint Appendix, and the three 8-1/2 x 14" Exhibit Volumes, will be referred to by the designations "App." and "Ex.App.", respectively.

license for Europe based thereon, both predicated upon the alleged Larkin invention for which plaintiff seeks exclusivity in this suit.

On the second day of trial the district court granted plaintiff's motion to strike, and rendered an opinion in which it assumed, without deciding, that "the British patent was obtained by fraud", and found that the exclusive license based on the application for this British patent was "clearly anti-competitive". The court ruled, however, that these fraudulent and restrictive activities in plaintiff's dealings with its alleged invention, cannot impede its right to exclusivity for the same invention under its U.S. patent. 185 USPQ 505 (SDNY, 1975). (Opinion on Motion, App. 59)

The defendant appealed from the district court's holding of validity and enforceability as to the Larkin patent in suit, including the court's ruling on the plaintiff's motion to strike, and the plaintiff appealed from the district court's holding of invalidity of the two Hutchings patents in suit.

#### PATENTS IN SUIT\*

Larkin Patent 3,184,556. The Larkin patent in suit concerns

---

\* In his opening statement plaintiff's counsel stated that plaintiff would rely only upon claim 1 of each of the patents in suit (App. 197) and, therefore, on this appeal, except where pertinent to claim 1, the other claims of these patents can be ignored.



a communication headset designed for airplane pilots and said to be adaptable to be used alone or with the oxygen masks employed by pilots. For convenience, a copy of the first sheet of the drawings of the Larkin patent is attached hereto and marked by tab AA. As shown in Fig. 2 of the drawings, the headset includes a small case or fitting 10 that houses a microphone and receiver and clips onto an eyeglass frame, or onto a headband, adjacent the wearer's ear -- with a hollow sound-carrying tube 26 extending from the microphone to the wearer's mouth, and a second such tube 29 extending from the receiver into the ear. (Ex.App. 2)

Hutchings Patent 3,548,118. This Hutchings patent (at tab A) concerns a post-auricle or behind-the-ear headset having a casing 14 shaped to fit behind the ear. The casing includes a hook-like projection 17 at its upper end, to support it on the ear, and encloses a microphone 31 and receiver 36. A hollow telescoping sound tube 18 extends from the microphone, over the ear, to the wearer's mouth, and a second sound tube 19 extends from the receiver, under the ear, into the wearer's ear. (Ex.App. 7)

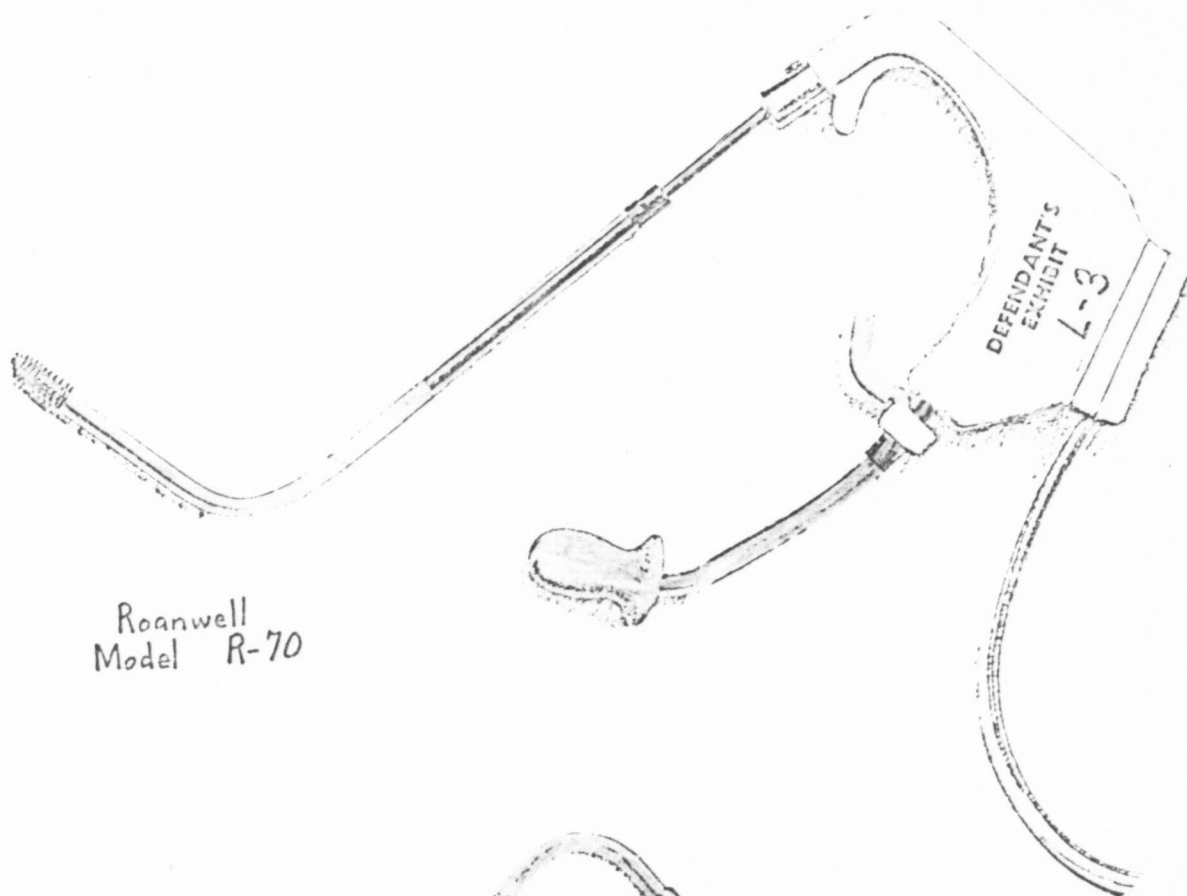
Hutchings Design Patent 218,173. This patent concerns the design or configuration of the headset disclosed in the Hutchings '118 utility patent, and like all design patents, contains just a single, formal claim to the design "as shown and describe". (See tab B hereof; Ex.App. 13.)

### ACCUSED DEVICES

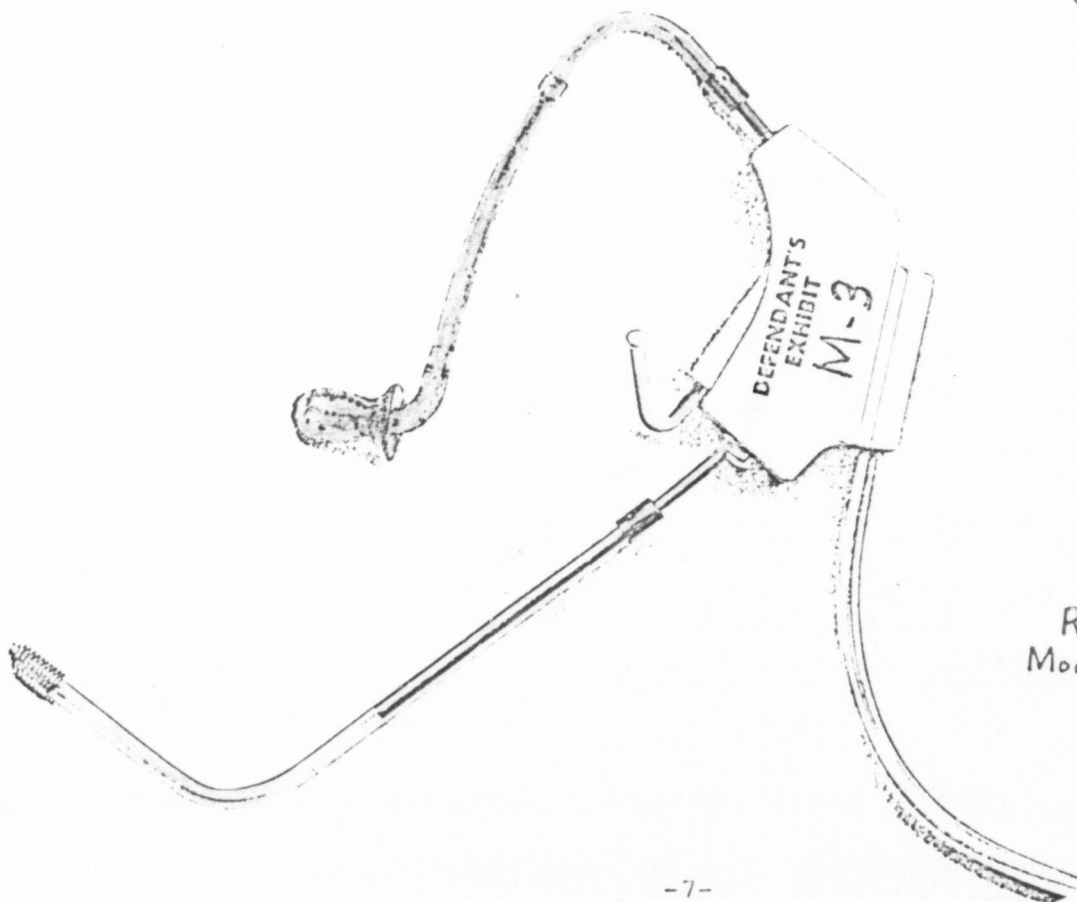
As shown by the photocopies on page 7 hereof, the accused headsets are designated Roanwell Models R-70 and R-71. Both are post-auricle headsets, the R-70 having a microphone tube (or voice tube) extending over the ear and a receiver tube (or ear tube) under the ear, as in the Hutchings patents, while the R-71 is the reverse.

The small under-ear stabilizing hooks supplied with these headsets have been colored orange. Most users do not require these hooks and discard them, but they may be required on some very large or very small ears. (App. 929-30)

Both the R-70 and R-71 headsets are charged to infringe the Larkin patent in suit, while only the R-70 (i.e. the over-the-ear voice tube arrangement) is charged to infringe the Hutchings patents. The district court found that, if valid, the patents in suit are infringed, as charged, and this finding will not be challenged by defendant on this appeal.



Roanwell  
Model R-70



Roanwell  
Model R-71

## ARGUMENT

Since the plaintiff has been designated the appellant for purposes of this appeal, and plaintiff has already filed a brief pertaining to the Hutchings patents in suit, we will deal first with the Hutchings patents, and then the Larkin patent.

### Hutchings Patent 3,548,118

Background. Hutchings' work on a post-auricle headset began in mid-December of 1968, after both plaintiff and defendant had bid on a contract to manufacture a new headset for Western Electric, designated Model 61, and the contract was awarded to defendant. (App. 859, 911-12; Agreed Findings P-12.1, D-66 and 68 at App. 122, 155) The Model 61 headset is an earmold-mounted headset, in the sense that it is mounted in an earmold which rests within the outer ear of the wearer. See Bryant patent 3,440,365 at tab C hereof, which is based upon the Model 61 headset.

Prior to the time of Hutchings' work on a post-auricle headset, post-auricle hearing aids had been in common use. Also, the prior art disclosed converting a post-auricle hearing aid to a post-auricle headset by changing its internal wiring and adding a voice tube from the microphone



port to the wearer's mouth. (Agreed Finding D-59 at App. 153; Ex.App. 1075)

Thus, after the headset of the Hutchings patents in suit was marketed by plaintiff, under the name "StarSet", plaintiff was sued by Telex for infringing a Telex-owned patent on a post-auricle headset (namely, Flygstad patent 3,280,273 at tab D), and plaintiff defended on the basis of its own previous post-auricle headset (Model MS-43), made from an Audiotone post-auricle hearing aid, stating:

"... This operating headset [plaintiff's Model MS-43] was made from an Audiotone Model 77 [post-auricle] hearing aid with the microphone and receiver therein being rewired to act as a pilot's headset. A piece of hearing aid pipe was used as the microphone tube. This unit was used during the winter of 1961-62 in an Aero-Commander airplane". (Ex.App. 1075)

Plaintiff asserted that its MS-43 post-auricle headset was in public use in 1962 and "for at least several years thereafter", and that the headset of the Flygstad patent was in fact derived from the MS-43 headset.\* (Ex.App. 1075-6, 1086-7)

As shown by the photograph of the Audiotone Model 77

---

\* Plaintiff also asserted in the Telex suit, in sworn answers to interrogatories filed the day before plaintiff filed its Complaint in this suit, that even in 1962 there was no invention in converting a post-auricle hearing aid to a post-auricle headset, to form either the MS-43 or the Flygstad headset. (Ex.App. 1074-5, 1087)

hearing aid at tab E, this hearing aid had an ear tube at the top of the casing, and a microphone port near the bottom. (App. 863-4) It was converted by Audiotone to a similarly-configured headset (plaintiff's Model MS-43, at tab F) by the addition of a voice tube from the microphone to the wearer's mouth. (Opinion, App. 1106; Ex.App. 1075)

While Mr. Hutchings testified at trial that at the time of his work in December of 1968 he did not know that post-auricle hearing aids had previously been converted to headsets (App. 863), one of the first steps in his headset design was a tour he took with others of the local hearing aid shops in Santa Cruz, where plaintiff was then located. (Ex.App. 1007; App. 854) Moreover, one of the hearing aid shops he visited, Bappell's, carried an Oticon post-auricle hearing aid which had both the ear tube and a short microphone tube located at the top of the hearing aid case -- above the ear. (See tab G hereof; App. 1057.)

A few days later, on December 23, 1968, Mr. Hutchings began laying out designs for post-auricle headsets\*, and his first layout drawing on December 30, a week later, showed a headset having precisely the same tube configuration as

---

\* As the district court found, there are four possible combinations of voice tube and ear tube locations in a post-auricle headset, both over the ear, both under the ear, voice tube over and ear tube under, and the reverse. (App. 541, 1038-9; Opinion, App. 1106)

the Oticon hearing aid -- i.e. both tubes over the ear.

(Ex.App. 988, 1003) Three days later plaintiff's president drove to San Francisco and purchased an Oticon hearing aid, and personally deposited it on Hutchings' drawing board.

(App. 919-22)

Hutchings obtained a patent on this first headset design, as shown at tab H, without ever mentioning to the Examiner his knowledge of the similarly-configured Oticon hearing aid, and without the Examiner ever citing any prior art along these lines. (Ex.App. 915) Plaintiff's brief alludes to "some initial layout work with both acoustic tubes coming out of the top", but does not mention its relationship to the Oticon hearing aid or the fact that plaintiff also secured a patent on this "initial layout work". (P.Br. 47)

Hutchings worked on his first design, with the two tubes over the ear, for a few days, until January 2, 1969, but he recognized that this version had obvious problems because of the bulk of the two tubes over the ear causing interference with eyeglass frames, and other factors.

(App. 839)

According to his notebook entry, he "then evaluated" moving the ear tube below the ear, and he had a layout of that design completed either the same or the next day -- this second design forming the basis of the two Hutchings patents in suit. (App. 840-1)

Obviousness. Mr. Hutchings testified that while in December of 1968 he did not know that a post-auricle hearing aid had previously been converted to a post-auricle headset, his work amounted to such a conversion. (App. 863) In this regard he testified as follows:

"Q At this time, which would be late 1968 or early 1969, it was known, was it not, that you could convert a behind-the-ear hearing aid to a behind-the-ear headset?

A I don't know whether it was known, but I did it.

Q Hadn't Plantronics done it before by converting an Audiotone model 77 to a headset?

A No. I didn't know about the MS43. I found out about that later on." (App. 863)

With regard to his first headset design, having both tubes over the ear, for which he was awarded a patent not involved in this suit (at tab H), he testified:

"Q . . . if you had the . . . headset made up of the Audiotone Model 77 which I am now holding up and it was a headset where the internal works were rewired and the ear tube was over the top and the voice tube down at the bottom to convert that into a headset, wouldn't it be perfectly clear that if you had a different hearing aid with the two tubes at the top [as the Oticon] you could equally well bring out the microphone tube to the mouth and make a headset from it?

A Yes. That is why I said I did it." (App. 866)

With regard to his second headset design, which had the ear tube under the ear, and formed the basis for the two Hutchings patents in suit, he testified:



"Q Instead of having this one I am holding, the Audiotone 77, if you had a hearing aid case which did have a voice port, a voice tube at the top and the ear tube at the bottom, wouldn't it then also be perfectly obvious that you could convert that by the same interwiring as on the Audiotone 77 and by bringing that voice tube out to the mouth?

A Well, maybe not obvious but maybe with a bit of work, yes." (App. 866-7)

This assertion that the second design may have required "a bit of work" may well have been based upon the fact that Mr. Hutchings had not seen such a hearing aid design in 1968 -- with a voice tube at the top and an ear tube at the bottom -- even though it was in the prior art. (See Figs. 1 and 2 of German patent 1,132,973 at tab I hereof; Ex.App. 859.) Indeed, he testified at trial that he did not believe that he had ever seen such a hearing aid (App. 858), and, also, that "When . . . you don't have this to go on, it is not that easy." (App. 864)

It is well settled, however, that one seeking a patent is chargeable with knowledge of the prior art, whether or not he seeks to avail himself of the knowledge available. Graham v. John Deere Co., 383 U.S. 1, 36 (1966); David & David, Inc. v. Meyerson, 388 F.2d 292 (2 Cir. 1968).

Thus, at the time of Hutchings' work in December of 1968 and January of 1969, the prior art disclosed:

1. converting a post-auricle hearing aid of one configuration (i.e. with an ear tube at the top and

microphone port at the bottom, as shown at tab E) into a post-auricle headset of the same configuration, by appropriate internal wiring changes and extending a voice tube from the microphone to the wearer's mouth; (tab F; Ex.App. 816, 820)

2. post-auricle hearing aids, such as the Oticon, with both an ear tube and microphone tube at the top (tab G; Ex.App. 857); and
3. a post-auricle hearing aid with a microphone tube at the top and an ear tube at the bottom, as shown in Figs. 1 and 2 of German patent 1,132,973. (Tab I; Ex.App. 859)

The first Hutchings design in late December of 1968, in effect, followed the teaching of item 1 above to add a voice tube to the microphone port of the Oticon post-auricle hearing aid of item 2, to convert it to a headset, for which Hutchings was granted a patent (without any mention of the Oticon hearing aid). (tab H; Ex.App. 911)

The second Hutchings design, a few days later, amounted to following the teachings of item 1 to add a voice tube to the microphone port of the post-auricle hearing aid of item 3, to convert it to a headset, for which the Hutchings utility patent in suit was granted (again without any mention of a hearing aid having a microphone port or tube over the ear).

Further, the grant of the Hutchings utility patent in suit was based upon an erroneous technical argument to distinguish from the post-auricle headset of the Flygstad patent (tab D), which had an under-the-ear voice tube. Hutchings' attorney argued that, unlike Flygstad, the Hutchings headset achieves stability by virtue of the fact that the weight of the voice tube extending from the upper portion of the housing provides "a torque which tends to overcome the torque introduced by the weight of the housing and associated components housed therein". (Ex.App. 416) Also, he relied upon the presence of this "torque" feature in two of the Hutchings claims 5 and 6. (Ex.App. 413-4, 419) The Examiner, thereupon, allowed claims 5 and 6, except for an objection to their wording, and after a personal interview he also allowed claims 1-4 and a new claim 7. (App. 443-4, 448, 450)

The fact of the matter, however, as the district court found, is that this Hutchings technical argument is totally unfounded. (Opinion, App. 1110-11) The weight of the voice tube in the Hutchings headset is so light as to produce no appreciable torque, certainly not enough to have any significant effect on counterbalancing the weight of the housing and its components -- and whatever torque it produces is both undesirable from a balance standpoint and virtually identical to the torque produced by the under-the-ear voice

tube in the Flygstad headset. (App. 874, 971-3) Thus, whether the voice tube extends from the top or bottom of the post-auricle casing, since its weight is downward, and forward of the pivot point at the top of the ear, its torque, however small, will be in the direction opposite the torque produced by the housing. (App. 874-6, 985)

The grant of the Hutchings utility patent was, therefore, without the benefit of either Hutchings or the Examiner citing any prior art hearing aids with over-the-ear microphone tubes or ports, and predicated upon an erroneous technical argument. While the district court found the erroneous argument to be the result of an innocent mistake, the presumption of validity which normally attends the issuance of a patent is undercut by both of these factors. Kahn v. Dynamic Corp. of America, 508 F.2d 939 (2 Cir. 1974), cert. denied 421 U.S. 930 (1975); Formal Fashions, Inc. v. Braiman Bows, Inc., 369 F.2d 536 539 (2 Cir. 1966); Lemelson v. Topper Corporation, 450 F.2d 845, 849 (2 Cir. 1971); Julie Research Laboratories, Inc. v. Guildline Inst., Inc., 501 F.2d 1131, 1136 (2 Cir. 1974).

And, as indicated both by the testimony of Mr. Hutchings himself and that of the defendant's experts at trial, and found by the district court, the post-auricle headset of the Hutchings utility patent was clearly obvious to one skilled in the headset art in 1968 having knowledge of the foregoing prior art. (App. 866-7, 701-6, 984-5)



Secondary Factors. Plaintiff asserts that secondary factors such as long-felt need, failures of others, etc. support a conclusion that the Hutchings headset was not obvious, but this is not the case\*. Cf. Graham v. John Deere Co., supra.

Plaintiff refers to its own joint efforts with Audio-tone in 1962 as reflecting both a long-felt need for, and an unsuccessful attempt to devise, a post-auricle headset. These efforts, however, were not unsuccessful, and they dispel any real market need since they resulted in an effective post-auricle headset (plaintiff's Model MS-43) which was not marketed -- presumably because it did not meet the low-cost goal set by plaintiff as a market entry requirement for the light civil aircraft market. (Agreed Finding D-58 at App. 153; Ex.App. 951, 953; App. 990)

Plaintiff demeans its MS-43 headset as lacking stability, but this is figmentary. Defendant sells a post-auricle headset which, like the MS-43, has an under-the-ear voice tube (Model R-71), as well as one with an over-the-ear voice tube (Model R-70), and its sales of these two headsets are about equal. Indeed, aside from sales to Western Electric, defendant's under-the-ear version outsells its over-the-ear version 6 to 1. (App. 924-5)

---

\* Plaintiff asserts that a long-felt need and failures by others are established by Agreed Facts, but this is denied. These factors come into play only by a distortion of the facts.

Actually, as shown on page 7 of this brief, defendant's over-the-ear and under-the-ear headsets both include small stabilizing hooks which hook under the ear lobe to ensure stability of the headsets on all users. As already noted, most users do not require these hooks, but they may be required on some very large or very small ears. (App. 929-30) If the plaintiff's early under-the-ear headset was in fact unstable, which was not the case, such a hook could have been readily added to rectify the situation, without the exercise of invention.

Plaintiff asserts that small movements of the head cause a significant displacement of the microphone in the under-the-ear version, but when plaintiff's expert attempted to demonstrate this at trial, using defendant's headsets without the stabilizing hooks, the amount of displacement was imperceptible -- causing Judge Connor to say "I can't see it". (App. 310-11) Moreover, as noted, if this were indeed a problem it could be corrected by a simple hook.

It is noteworthy in this regard that when plaintiff was sued by Telex for infringement of the Flygstad patent, plaintiff filed an affidavit asserting that its under-the-ear MS-43 headset was "self-supporting" and "stayed in operable position on the ear without any extrinsic support", and that "the radio communications established with said headset were completely satisfactory". (Ex.App. 1081-2) Also, as

noted above, that this headset was in public use in 1962 and for "at least several years thereafter". (Ex.App. 1086)

Plaintiff also refers to efforts by Audiotone in 1962, presumably to add another name to the list, but these are the joint efforts with plaintiff already discussed, which resulted in an effective post-auricle headset.

Plaintiff also refers to the efforts by Telex in the 1962-3 period which resulted in the under-the-ear post-auricle headset of the Flygstad patent. Again, however, these efforts resulted in an effective post-auricle headset. And, if plaintiff's assertions in the Telex suit are to be believed, the Flygstad headset design was not even an independent effort, but one based upon plaintiff's MS-43 headset\*. (Ex.App. 1075, 1084-5)

---

\* Plaintiff urges in its brief, as the apparent underpinning of its argument of nonobviousness, that a "very important" Agreed Finding is that post-auricle hearing aids with top-mounted microphones were "widely and commonly" known prior to Hutchings' work -- i.e. prior to late December of 1968. (P.Br. 46, 61) Plaintiff apparently extrapolates this Agreed Finding to mean widely known as early as 1962 -- which is neither supported by the Agreed Finding or consonant with the facts -- and plaintiff asserts that despite this "wide" and "common" knowledge back in 1962 "everyone" (i.e. the plaintiff-Audiotone MS-43 and the Flygstad (Telex) headset said to be derived therefrom) proposed under-the-ear voice tubes in headsets. This is contrived. There is no evidence of record that either Audiotone or Telex had post-auricle hearing aids with top-mounted mikes in the 1962-3 period. Rather, the record shows only that Audiotone had a post-auricle headset Model 77 with a bottom-mounted mike, which was used to make the MS-43 headset.

While the record does not show when post-auricle hearing aids with top-mounted mikes first became widely

Contrary to plaintiff's assertion that these efforts resulted in commercial failures -- which plaintiff equates with the headsets not having been marketed (P.Br. 49, 50, 53) -- their under-the-ear voice tube design is a viable commercial product -- as shown by defendant's R-71 headset. (App. 824-5)

Plaintiff also refers to efforts by the British Ministry of Aviation, but these efforts involved performance tests on the Larkin clip-on headset -- not efforts to develop a post-auricle headset, or a manifestation of a long-felt need for one. (Ex.App. 1207) In the course of these tests, run six years before Hutchings' work, one or more of the flight controllers suggested that a post-auricle headset might be feasible, and proposed the same voice tube over-the-ear

---

\* known, it is defendant's understanding that Siemens A.G. of Germany first introduced them into this country by a few ads in the early 60's (see, e.g., Ex.App. 843); but that there were no substantial sales or widespread knowledge of this type of headset until the 1966-7 period. See, e.g., Siemens A.G. v. Beltone Electronics Corp., 381 F.Supp. 57 (DC Ill. 1974), where the court found Beltone's first public announcement of its post-auricle hearing aid with a top-mounted (also called "front-facing") microphone to be November 1, 1965.

Moreover, widespread knowledge of post-auricle hearing aids with top-mounted mikes, prior to late 1968, should not be deemed widespread knowledge of post-auricle hearing aids having a top microphone tube and a bottom ear tube, as in Figs. 1 & 2 of German patent 1,132,973 -- or widespread knowledge that post-auricle hearing aids had been converted into post-auricle headsets, which was not known to either plaintiff's witness Mr. Romanow or to Mr. Hutchings. (App. 358,863)



design later proposed by Hutchings. (App. 985-6) Thus, the report on these tests states that:

"The possibility of making a self-supporting capsule and microphone tube to hook over the ear is worthy of consideration." (Ex.App. 1214)

Mr. Hutchings testified in a deposition that this was very similar to his construction, but upon submission of the deposition transcript, he changed his testimony to state that it was the same concept "in the sense that it was a behind-the-ear capsule". (App. 885-6) In any event, however, this suggestion was not made by a headset designer but by a flight controller at the time of his first acquaintance with the Larkin headset, as an obvious modification of the Larkin clip-on headset.

The plaintiff challenges defendant to cite a single item of prior art which suggests a post-auricle headset the "Hutchings' way". (P.Br. 63) While there is no prior art headset of record which constitutes a complete anticipation of the Hutchings headset, the reported suggestion of the British flight controllers in 1962 proposed such a headset, as Mr. Hutchings recognized. Moreover, at about the same time, plaintiff and Audiotone, using the Audiotone Model 77 bottom-mike hearing aid, converted it to the MS-43 headset in the only sensible way (tabs E & F) -- and Mr. Hutchings subsequently followed the same path on the basis of the Oticon hearing aid (tab G) and, in effect,

the headset shown in Figs. 1 and 2 of German patent 1,132,973. (Tab I)

The plaintiff also refers to a failure by Bell Laboratories to develop a post-auricle headset, or its rejection of such a headset, but the record does not show any such failure or rejection. While plaintiff's expert Mr. Romanow testified that Bell Laboratories considered a behind-the-ear headset in "a very transitory way", and made a "Lucite model which was very rudimentary", but the outlook for stability was so poor they abandoned it (App. 301), there is no indication whether this consideration involved an hour, a day, a week or whatever. Nor is there any indication whether the rudimentary model was properly balanced, whether the model had a voice tube over or under the ear, or anything else about it. Moreover, this testimony by Mr. Romanow apparently had reference to a "Lucite post-auricle hook", introduced as plaintiff's exhibit 127, which is not a behind-the-ear headset at all, but an inexpensive hook which loops over the ear and contains a hole for insertion of a hearing aid transducer. (P.Br. 54; Ex.App. 464)

Moreover, Mr. Romanow testified that at the time of the work at Bell Laboratories on the Model 61 earmold-mounted headset, which was under his direction and presumably in the same time frame as the transitory look at a

Lucite ear hook, he was unaware that a post-auricle hearing aid had earlier been converted to a post-auricle headset. (App. 358) Cf. Formal Fashions, Inc. v. Braiman Bows, Inc., supra; Preuss v. General Electric Co., 392 F.2d 29, 32-3 (2 Cir. 1968); Rains v. Niagua, Inc., 406 F.2d 275, 287 (2 Cir. 1969).

Plaintiff refers to activities at Roanwell in mid-1969 -- which were not even prior to Hutchings' work. Nor do these efforts support a finding of nonobviousness. Before defendant knew the tube configuration of the Hutchings headset (or that of the Flygstad patent), defendant's engineers sketched out both the over-the-ear and under-the-ear versions of a post-auricle headset, and recognized them both as viable products. (App. 384-5, 394-5, 402-3, 947-8)

Thus, the record shows no need for a post-auricle headset prior to Hutchings' work, and no unsuccessful efforts by others to devise one. Indeed, it shows no substantial efforts prior to Hutchings' work, and the limited efforts that did take place resulted in effective headsets.

We note that plaintiff also refers to alleged failures by others prior to the 1962-3 period, at which time the plaintiff's MS-43, the Flygstad post-auricle headset, and German patent 1,132,973, rendered the



headset of Hutchings utility patent obvious. While the record shows no efforts prior to 1962 directed to post-auricle headsets, as the Supreme Court observed in the Graham case, any failures prior to the date of these references are wholly irrelevant. Graham v. John Deere Co., supra, 383 U.S. at p. 36.

Plaintiff also asserts that the district court erred in finding that there was no defiance of ancient principles in connection with the Hutchings headset design. Plaintiff asserts that, in fact, one would be directed away from a post-auricle headset with an over-the-ear voice tube, because the length of the voice tube would have to be longer than in the under-the-ear version.

This assertion, however, is specious -- just as the "torque" argument presented to the Patent Office to secure the grant of the Hutchings patent. It was well known prior to Hutchings' work that if acoustic resistance is included in the voice tube, differences in voice tube length have no appreciable effect. (App. 693, 954-5; Ex.App. 651, col. 5, line 29, col. 6, lines 38-46; Ex.App. 866) Indeed, previous voice tubes with acoustic resistance were even made telescoping in nature, to be adjustable in length for different head sizes.



(Ex.App. 866) Such acoustic resistance was present in the telescoping voice tube of the Bell Model 61 headset, and it was adopted by Mr. Hutchings from that headset. (App. 859-60) Mr. Hutchings testified that the acoustical resistance "has to be there to compensate for varying lengths of the tube". (App. 860)

Plaintiff also refers to a concern about eyeglass interference, but while this concern might discourage the use of two tubes above the ear, which Hutchings managed to overcome in his first design, it is not clear why a voice tube above the ear would cause appreciably more eyeglass interference than an ear tube over the ear. And the record is completely barren as to this new-found concern deterring anyone skilled in the art from an over-the-ear voice tube -- when the ear tube is at the reverse location. Rains v. Niagua, Inc., supra, 406 F.2d at p. 280; Lemelson v. Topper Corporation, supra, 450 F.2d at p. 849; Vanity Fair Mills, Inc. v. Olga Company, 510 F.2d 336, 339-40 (2 Cir. 1975).

Plaintiff cites as dramatically proving this point a 1963 memo (actually 1962) which, as plaintiff well knows, is comparing the choice of having the two tubes above the ear with the ear tube above and the voice tube below -- where the latter is obviously the better choice. (App. 986-990, 993; P.Br. 57)

The plaintiff also asserts that the district court erred in finding that plaintiff's commercial StarSet achieved no instant acclaim, and we are inclined to agree that this finding understates the commercial success the StarSet has achieved. We agree with the district court, however, that neither commercial success nor the other secondary factors discussed can tip the balance against the heavy evidence of obviousness relating to the Hutchings patent. Vanity Fair Mills, Inc. v. Olga Company, supra; Julie Research Laboratories, Inc. v. Guildline Inst., Inc., supra; Formal Fashions, Inc. v. Braiman Bows, Inc., supra. Moreover, while the plaintiff's StarSet has achieved substantial commercial success, this success is not in relation to the closest prior art headset, namely the post-auricle headset with an under-the-ear voice tube. Rather, plaintiff asserts commercial success in relation to the Bell earmold-mounted headset Model 61, which the record shows to be superior acoustically but impractical for cost and logistics reasons because it requires one or two custom-fitted earmolds for each user. (App. 931-3)

To test the commercial success of the plaintiff's headset against the closest prior art, defendant's comparative sales figures should be employed -- since defendant sells both under-the-ear and over-the-ear post-auricle headsets, with the same transducers in each, the same sales

force, same service organization, same guarantees, etc. These sales figures show a substantially equal number of sales for the two units, and if the sales to Western Electric are excluded (since Western has been buying plaintiff's over-the-ear StarSet for some time), the defendant's sales have been about 6 to 1 in favor of the prior art under-the-ear units. Also, even including Western, 4 out of every 5 customers prefer the prior art under-the-ear units. (App. 824-5; Opinion, App. 1107)

Plaintiff also asserts that the district court erred in finding that the StarSet did not replace any competitive products -- since its sales rose as the sales of the Bell Model 61 headset declined. While we agree the StarSet sales rose while the Model 61 sales declined, in view of the problems peculiar to the Model 61 headset, it is not clear that its decline was caused by the StarSet, or, that, in any event, it would be correct to say that the StarSet replaced the Model 61, since the StarSet was on the market first. However, as indicated above, plaintiff's commercial sales cannot render the Hutchings headset nonobvious.

Plaintiff also urges that the district court erred in not giving evidentiary weight to defendant's copying of the headset of the Hutchings utility patent. In this regard, the plaintiff refers to the district court's finding that copying by defendant seems inescapable, without regard to



the fact that that finding pertained to the Hutchings design patent and not the Hutchings utility patent. (Opinion, App. 1117) As to the latter, as already noted, before defendant knew of the configuration of the plaintiff's StarSet, or the configuration of the Flygstad patent, defendant's engineers sketched post-auricle headsets with both under-the-ear and over-the-ear voice tubes. (App. 384-5, 394-5, 402-3, 947-8) Some of defendant's personnel, both engineering and sales, preferred one and others preferred the other, and this is still true. (App. 440-1, 950)

Defendant decided to proceed first with the under-the-ear voice tube version, since this construction required less conversion of existing hearing aid molds and it used more parts of the Model 61 headset defendant was then manufacturing. Defendant's sales department, however, wanted a "me-too" copy of its wealthy competitor's headset, and, while the record is clear that defendant never made or marketed a me-too copy, and could not do so because its transducers are so much larger, defendant then decided to develop both the over-the-ear and under-the-ear versions in parallel. (App. 385-6, 395, 400, 946-7) And, as already indicated, both versions were subsequently marketed, and no commercial preference was displayed for the over-the-ear version.

Thus, while plaintiff has made many assertions concerning secondary factors, it is nevertheless clear, as the

district court held, that the Hutchings post-auricle headset configuration was obvious in 1968, and the Hutchings utility patent is consequently invalid under 35 USC 103.

Indeed, the only real need evidenced by the record, albeit self-imposed, is the need which plaintiff felt in mid-December 1968 to market a headset in competition with the contemplated Bell Model 61 headset. Plaintiff chose a post-auricle approach, went to the local hearing aid shops, and within two weeks Mr. Hutchings, who had no headset experience when he joined plaintiff the year before, had two headset designs, and subsequently three patents -- all based upon, or derivable from, post-auricle hearing aids, which the prior art had disclosed to be vehicles for conversion to post-auricle headsets.

Hutchings Design Patent 218,173

Obviousness. While the precise design of the Hutchings headset is not shown in the prior art, its casing is similar to various angular or squared-off hearing aid casings.

More specifically, the Hutchings headset is similar to the squared-off shape of the Vanco MINI-EAR hearing aid (Ex.App. 903, 909), or the Qualitone hearing aid (Ex.App. 901-2), or the hearing aid shown in Weiss patent 3,019,306 (Ex.App. 892), incorporated into a post-auricle headset, such as that of the Flygstad patent, which has forwardly



projecting voice and ear tubes and a plug-in connector.

(Ex.App. 886)

This court has stated on many occasions that a design is not inventive merely because it is "new and pleasing enough to catch the trade". Rather, it must reflect "some exceptional talent beyond the skill of the ordinary designer". 35 USC 103, 171; Rains v. Niaqua, Inc., supra; G.B. Lewis Company v. Gould Products, Inc., 436 F.2d 1176, 1178-9 (2 Cir. 1971) (where, as here, an assertion of straight clean lines, right angles and a "square shoulder" was made); Lancaster Colony Corp. v. Aldon Accessories, Ltd., 506 F.2d 1197 (2 Cir. 1974).

While the casings of the squared-off hearing aids of record differ from each other, and from the casing of the Hutchings headset, the differences between them do not amount to invention. Indeed, as Mr. Mol testified on cross examination, they all appear to be variations on a theme. See Hadco Products, Inc. v. Walter Kidde & Company, 462 F.2d 1265, 1274 (3 Cir. 1972), cert. denied 409 U.S. 1023 (1972).

The plaintiff objects to the district court's observation that in the final analysis a court's evaluation of the obviousness of a design is essentially subjective. In this regard, the district court observed that secondary considerations such as long-felt need, failures of others, etc., rarely apply in the case of design patents, and that, as a

consequence, the court's evaluation is essentially subjective. (Opinion, App. 1120) The court did not suggest, however, as plaintiff contends, that it was adopting a "subjective-artistic-taste test" and "abandoning the statutory test of obviousness to skilled designers". (P.Br. 15)

On the contrary, the district court made it clear that it was applying, and not abandoning, the test of obviousness to one of ordinary skill in the art, as prescribed by 35 USC 103. Thus, the court found that the failure of the record to reflect any design training or experience whatever on the part of Hutchings was "some evidence that only routine skill was involved in his design", and also that:

"I cannot believe that any artistic talent beyond that of a designer of ordinary skill in the art was required." (Opinion, App. 1121)

This finding is clearly supported by the prior art of record, as well as by the only direct testimony of record evaluating the obviousness of the Hutchings design. (App. 1019)

Non-ornamental Nature In addition to the requirement of non-obviousness, in order to be patentable a design must be ornamental. 35 USC 171. Thus, in Hygienic Specialties Co. v. H.B. Salzman, Inc., 302 F.2d 614, 618 (2 Cir. 1962), this court stated that:

"A design dictated solely by mechanical or functional requirements is not patentable."

To the same effect is Blisscraft of Hollywood v. United

Plastics Company, 189 F.Supp. 333, 337 (SDNY 1960), aff'd 294 F.2d 694 (2 Cir. 1961).

In the present case, the district court held that the small prong of the Hutchings headset, which projects downwardly just forwardly of the ear, in order to anchor the headset on the ear, and the nearby ferrule, are clearly functional. (Opinion, App. 1119) The same is true as to the interior curve of the casing, which the district court found to be "curved to fit the contour of the rear surface of the auricle", and which, like the prong, was copied by Hutchings from a hearing aid casing. (App. 839; Opinion, App. 1099)

Moreover, as testified by Mr. Hutchings, the remaining aspects of the Hutchings design were similarly selected for purely functional reasons, initially just to get the square-shaped microphone and receiver units into the smallest possible housing, and later to provide a better bayonet connection for the voice tube, to increase the housing size to accommodate a larger microphone transducer, and to provide adequate spacing, between the microphone and receiver, for the plug-in connector. (App. 878-81, 1008-14)

With regard to his early layouts, which look very much like the design of the Hutchings patent, Mr. Hutchings testified:



"The thing to remember is I am very early on design here. I haven't started thinking about what it is going to really look like. I am trying to get pieces into a shape, obviously the smallest housing I can bear." (App. 878-9)

With regard to the changes he made to reach the design of the Hutchings patent, i.e. the last design in a book of layout drawings marked defendant's exhibit DD, Mr. Hutchings testified as follows:

"Q . . . What I was trying to do is determine all of the changes between the first drawing and the last drawing in Exhibit DD. A. Change in socket, change in transducer, change in capsule shape. I think that's it, yes.

"Q Were all of these changes made for functional reasons? A. Yes. Then after that we do a little bit of industrial design." (App. 881)

Not only has Mr. Hutchings testified that his sole purpose was functional, up to the point of achieving the shape disclosed in the design patent, cf. Bently v. Sunset House Distributing Corp., 359 F.2d 140, 145 (9 Cir. 1966), but defendant's witness Mr. Mol explained that the result of Mr. Hutchings' functional purpose was a functional design, from a molding and structural and user's standpoint. (App. 1008-14) See Barofsky v. General Electric Corporation, 396 F.2d 340 (9 Cir. 1968), cert. denied 393 U.S. 1031 (1969).

Thus, the Hutchings design patent is invalid for failing to meet the "ornamental" requirement of 35 USC 171.

Infringement. The district court held that if valid the Hutchings design patent would be infringed by the defendant's

R-70 headset, but at another point the court observed that:

" . . . if there could be any patentability in the design, it would have to reside not in the broad and notoriously old concept of 'angularity' but in the particular number of planar side sections and of the ratios of their respective lengths. . . . If the Hutchings patent were given a sufficiently narrow interpretation to preserve its validity, it would not be infringed by the R-70." (Opinion, App. 1121-2)

While we agree with the district court's holding of invalidity, and, as indicated at the outset of this brief, we will not argue the issue of infringement on this appeal, we also agree with the district court that if the Hutchings design patent can be construed sufficiently narrowly to preserve its validity -- we think not -- it is not infringed by defendant's larger, thicker, lower-slung, curved-shoulder, R-70 headset (shown on page 7 hereof).

Larkin Patent 3,184,556

Background. In the Fall of 1960 United Airlines decided to obtain a lightweight headset for its pilots, to replace the bulky headsets then in use. The new headset was to include both a microphone and receiver, so as to eliminate the need for a separate hand-held mike. (Agreed Finding D-13, App. 146)

The project was assigned to Mr. Leonhardt, of the United engineering department, with directions to survey the market for a suitable headset. Mr. Leonhardt contacted some 22



suppliers, three of whom did not respond, and of those that responded he found that none of them had a totally satisfactory headset or would agree to develop one. (Agreed Finding D-13 at App. 146; Ex.App. 1092)

Mr. Leonhardt's superior, Mr. Trumbull, testified, in a deposition taken by plaintiff, that it was not that the suppliers were unable to develop a lightweight headset -- they were just not interested, since there wasn't enough of a market. In this regard, he testified that:

"... they were not interested in building anything like we wanted. I think most of them weren't interested not because they were dumb but because they didn't see any market. If they sold five for every airplane in the world they still wouldn't have a market or enough to bother with, compared with the consumer market. You know, the airplane industry isn't too big. You sell 500 of something, that saturates the market, pretty near." (Ex.App. 1102)

At the time of this project, Mr. Graham, plaintiff's current chief executive officer, was a pilot at United and also a partner of Mr. Larkin in a small company called Plane-Aids. (DX-MM, p. 50) Neither Graham nor Larkin had any education or experience in headsets, or in any other technical field (DX-JJ, pp. 97, 99), and their principal activity at Plane-Aids involved purchasing and reselling Japanese radio sunglasses called "Sun & Fun Glasses". (Ex.App. 44A; DX-JJ, p. 98; DX-PP, p. 5) These sunglasses contained a transistor radio in one of the temple bars, and a small ear tube which conveyed sound from the radio to the wearer's ear. (Ex.App. 1095)

Mr. Trumbull saw a Plane-Aids sales flyer illustrating the Sun & Fun radio sunglasses, and wrote to Plane-Aids stating that he had "another possible application" of this device. This was in April of 1961. (Agreed Finding D-15 at App. 146) A meeting followed shortly thereafter, between Trumbull, Leonhardt and Larkin, at which Mr. Trumbull indicated that he would like to obtain a lightweight boom-mike headset in the shape of the Sun & Fun glasses. (Ex.App. 1093-4, 5) Mr. Trumbull also advised Larkin at the meeting that there was no official interest in this development at United, and, therefore, that Mr. Larkin could not count on any financial help or even any orders if he developed such a headset. (Agreed Finding D-16 at App. 146-7; DX-MM, pp. 48-50, Ex. 18; Larkin Depos. pp. 5-6)

Larkin and Graham responded to United's request by making an eyeglass frame out of balsa wood, with the ear tube of the Sun & Fun glasses, and adding to it a small-diameter boom extending from one of the temple bars to a position in front of the wearer's mouth, where it supported a balsa wood microphone -- to form a mock-up of a headset -- and they presented photographs of this mock-up to United. (DX-MM, pp. 54-5, Exs. 20 & 21)

United responded favorably and wanted a working prototype, whereupon Larkin and Graham hired a technician by the name of Bill Bowman to build a prototype. Instead of building



a prototype having the boom-mike arrangement, however, as Larkin and Graham had proposed in the mock-up, Bowman built a headset with a voice tube extending from the wearer's mouth to a small microphone bracketed to the eyeglass temple bar -- together with the original ear tube. (DX-PP, Ex. 3; DX-MM, Exs. 23, 25)

While Mr. Bowman claimed credit for the abrupt change in direction to the use of a voice tube, rather than a boom mike, and asserted this to be based upon his previous experience with a sound tube and microphone to hear internal sounds of automobile engines -- the district court found that the record did not support this claim, and this point will not be pursued on this appeal.

After United had reviewed the first prototype, and briefly tested a second prototype, they were interested in going forward with the headset. According to Larkin's deposition testimony, he then obtained quantity prices on hearing aid eyeglass frames, which he could convert to headsets by making some internal wiring changes and adding a voice tube -- but he found that the price of the hearing aid eyeglass frames made the headset uneconomical. Consequently, he decided to abandon the eyeglass frame approach in favor of a clip-on version. (Larkin Depos. pp. 102-3) See Glikin v. Smith, 269 F.2d 641 (5 Cir. 1959), cert. denied 361 U.S. 915 (1959) where the same thing was done with hearing aids.

With regard to his understanding at the time as to the extent of the market for headsets in the aircraft industry, Mr. Larkin testified that:

" . . . I felt it opened a pretty good market in the airline industry. As [it] turned out, there isn't much of a market in the airline industry". (DX-JJ, pp. 111-12)

Actually, after becoming incorporated in mid-1961, plaintiff lost money for four years -- for a total loss of about \$350,000. (App. 425-7)

In December of 1961, the application for the Larkin patent in suit was filed in Larkin's name, claiming a miniature headset with a voice tube. (Ex.App. 234) The Examiner rejected the claims on the basis of two prior art patents showing headsets with voice tubes. (Dreher patent 2,904,640 at tab BB and Olney patent 2,485,405 at tab CC) In response to this rejection, Larkin's attorney amended the claims to call for an ear tube as well as a voice tube -- and urged that none of the cited patents showed ear tubes. (Ex.App. 253) Plaintiff did not, however, call the Examiner's attention to the fact that both Larkin and Graham were well aware of a CAA-approved pilot's headset with ear tubes, called the Twin-set (Ex.App. 1192-3), or that an ear tube was present in the Sun & Fun radio eyeglasses they started with, even though the ear tube distinction was relied upon for patentability.\*

---

\* Shortly after the Larkin patent application was filed, Larkin coauthored a paper in which he stated that the "outstanding feature" of his headset was its voice tube and "A standard earpiece is used to carry sound from the receiver to the ear". (Ex.App. 982)



Thereafter, without making any further search, the Examiner allowed the amended claims. (Ex.App. 264)

The district court excused the plaintiff's failure to call the Examiner's attention to headsets with ear tubes, while relying upon this feature, on the basis that the Examining Division that examined the Larkin application also handled hearing aids (which observation was wholly beyond the record in this case), and ear tubes were well-known in hearing aids. Also, the district court excused plaintiff's misstatement to the Examiner that the cited Dreher patent does not have an ear tube, on the basis that plaintiff obviously meant an ear tube "in the sense of claim 1". While we do not believe that the Examining Division's responsibility for hearing aids excused the plaintiff's failure to call attention to a headset with ear tubes, or its misstatement about the Dreher headset not having an ear tube, especially where the ear tube of the Larkin headset was being relied upon as the distinguishing feature over the prior art, we will not pursue this question on the present appeal. Carter-Wallace, Inc. v. Davis-Edwards Pharmacal Corp., 443 F.2d 867 (2 Cir. 1971); SCM Corporation v. Radio Corporation of America, 318 F.Supp. 433 (SDNY, 1970); Beckman Instruments v. Chemtronics, Inc., 439 F.2d 1969 (5 Cir. 1970), cert. denied 400 U.S. 956 (1970).

Larkin Invention. Before discussing the prior art, we note that the so-called Larkin invention involved placing the microphone transducer of a lightweight headset away from the mouth, so that its weight does not rest at the end of a boom to make the headset unstable, and coupling it to sound from the mouth by a voice tube. More specifically, the microphone is positioned in a housing with the receiver, adjacent the wearer's ear, and hollow tubes are used to convey sound from the mouth to the mike and from the receiver to the ear. (See tab AA.)

Anticipation. The prior art both anticipates and renders obvious the invention claimed in the Larkin patent -- Pritchett British patent 191 (dated 1878) and Dreher patent 2,904,640 (dated 1959) constituting anticipating references under 35 USC 102. (Tabs DD & BB)

The use of a voice tube in a lightweight headset, to permit one to locate the microphone transducer away from the wearer's mouth, goes back to 1878, where it was shown in Fig. 5 of Pritchett British patent 191 (tab DD). The headset of Fig. 5 of this patent has a headband, which is shown by dotted lines in Fig. 4, and includes a standard telephone instrument containing a microphone/receiver transducer, together with a voice tube for conveying sound from the mouth to the transducer and an ear tube for conveying received sound from the transducer to the ear. The transducer-

containing instrument rests against the wearer's shoulder, directly below the ear, and this arrangement completely anticipates Larkin claim 1, as shown in the claim chart at tab EE hereof.

The district court found that the Pritchett headset does not anticipate Larkin claim 1 since it uses a single transducer for both transmitting and receiving, rather than two separate transducers, since it uses a "large and ungainly" transducer, rather than a miniature one, and since the Pritchett transducer is not "adjacent" the wearer's ear.

A combined transmitter-receiver transducer has, however, long been a known equivalent of separate transmitter and receiver transducers, and is consequently anticipatory. (App. 631-2, 641, 965-7) Hubner v. Sunbeam Corp., 320 F.Supp. 298 (SDNY, 1970), aff'd 450 F.2d 878 (2 Cir. 1971); Tri-Wall Containers, Inc. v. Continental Can Co., 323 F.Supp. 700 (SDNY, 1971). Indeed, at the time plaintiff first announced its commercial MS-50 headset, which is the commercial version of the headset of the Larkin patent, it also announced a lower-cost version (Model 51) having just a single transducer to act as a combined transmitter-receiver. (Agreed Finding P-3.36 at App. 85; Ex.App. 756) Thus, a published new-product announcement on the MS-50 states:

" . . . The Model 51 . . . will be marketed at a lower price due to utilization of a single unit transmitter-receiver performing essentially the same function as the MS-50 . . ." (Ex.App. 756)



Whether the Pritchett transducer, which is hidden inside a casing, is "large and ungainly" or "miniature" may depend upon the frame of reference of the viewer, or perhaps the time frame in which it is being viewed, since component sizes decrease as technology advances (as shown by the miniature hearing-aid type transducer of the Dreher patent, to be discussed), but the Pritchett patent makes it clear that a small or miniature size is intended. Thus, in describing a handset using the transducer, shown in another figure of the Pritchett patent, the patent states that "This instrument can be folded up, so as to go readily into the pocket, or into a small case or box." (Ex.App. 640, lines 22-3)

In any event, however, if the Pritchett headset is not completely anticipatory because of the size of its transducer, there clearly would be no invention in using a smaller transducer when one became available. Canadian Ingersoll-Rand Co. v. Peterson, 223 F.Supp. 803, 807-8 (DC Cal. 1963); Electric Cable Co. v. Edison Co., 292 U.S. 69, 79-80 (1934).

With regard to whether the Pritchett transducer is "adjacent" the wearer's ear, it clearly appears to be "adjacent" the ear under which it rests. However, no invention would be involved in moving it closer.\*

---

\* We note that the adjective "adjacent" is present in Larkin claim 1 only as part of the "support means", i.e. "support means" for detachably supporting the mike and receiver adjacent the ear -- but the Pritchett headset clearly includes such "support means" in the form of the headband and collar clip, which can support the Pritchett mike/receiver anywhere from the ear to the chest.



In this regard, it is well to note the testimony of plaintiff's witness Mr. Metcalf, from NASA, that although he considered it a poor practice, some of the NASA flight controllers who did not like wearing the headband of plaintiff's MS-50 headset over their heads would simply "hang the headband around their neck" -- which would place the transducer case down on the neck or shoulder, somewhat like Pritchett's -- with the voice tube "sticking up", and use a piece of plastic tubing to their ear. (PX-148, p. 28) Surely plaintiff's MS-50 headset still includes the claimed "support means" when it is worn in this fashion. If not, this is a peculiar situation, and one which results only from a strained interpretation of Larkin claim 1. Moreover, once a headset with a headband is suggested, having both voice tube and ear tube coupling to a transducer case, as in Pritchett, no invention would be involved in moving the transducer case from the head to the shoulder, or vice versa.

The district court demeaned the Pritchett headset as being "implausibly designed by an architect" -- even though, under British patent law prior to 1949, an importer of an idea into Great Britain could file as its "inventor"\*, and under both past and present British law a patent application

---

\* The word "inventor" was said to be derived from the Latin words "in" and "venire", and construed as meaning to come into the Realm, Edgebury v. Stevens, 1 Web. P.C. 35 (1691); Walton v. Bateman, 1 Web. P.C. 615 (1842); Nickels v. Ross, 8 C.B. 679 (1849); Terrell and Shelley, "On The Law Of PATENTS" (9th ed., 1951), pp. 20-4; this being expressly negatived by S16(2) of the current British "Patents Act, 1949".

can be filed in the name of an assignee, rather than the inventor. British "Patents Act, 1949", §1(1). Moreover, as an architect in fact a less plausible inventor of a headset than an airline pilot or a garage mechanic or various others, and, more importantly, what influence did this factor have on the district court's determination?

The district court also observed that there is no evidence that Pritchett was ever constructed, much less marketed. But see Western States Mach. Co. v. S.S. Hepworth Co., 147 F.2d 345, 350 (2 Cir. 1945), cert. denied 325 U.S. 873 (1944); also see Pickering v. McCullough, 104 U.S. 310, 319 (1881); National Filters, Inc. v. Research Products Corporation, 384 F.2d 516 (5 Cir. 1967).

The district court also found, without any record support, that there is considerable doubt as to the practicability of the Pritchett headset; that if the wearer moved his head his ear would be impaled by the "spike-like" "rigid" horizontal extension of the ear tube -- but the Pritchett patent describes the ear tube as being "elastic or otherwise" and terminating in an earplug or "finial" (Ex.App. 640, line 52) -- and if a wearer's ear were indeed impaled, it would not require invention to change the portion of the ear tube entering the ear to a softer material.

Further, the court observed that the Pritchett headset would not move with the wearer's head, and consequently, that its voice tube would not remain a uniform distance from

the wearer's mouth -- but communication sets with voice tubes in a fixed position directly in front of the wearer, have long been viable products, such as the chest-supported horn-type units worn for years by telephone operators. (Ex.App. 649, col. 1, line 19) Indeed, the same is true of the Larkin headset as it is worn by some of the NASA flight controllers.

Turning to the Dreher patent (tab BB), this patent discloses an earmold-mounted headset, with a transducer casing 16 snapped into the earmold, a voice tube 21 extending from the earmold to the wearer's mouth, and an ear tube through the earmold to the wearer's ear.

While the Examiner initially ruled that this Dreher patent anticipates Larkin claim 1, he thereafter allowed this claim when Larkin's attorney amended it to include an ear tube and incorrectly asserted that there is no ear tube in the Dreher headset. (Ex.App. 248, 253)

While the district court found that Dreher has an acoustical ear tube, as well as a voice tube, the court ruled that the Dreher headset does not anticipate Larkin claim 1 because it employs a combined transmitter-receiver transducer, rather than two transducers, which are known equivalents, as already discussed\*. Also -- although not

---

\* In the Telex suit, the plaintiff listed the Dreher patent as prior art, along with the Larkin patent, as showing "the general combination of a microphone and a receiver in a headset". (Underscoring added) (Ex.App. 1084)



raised by the plaintiff -- the court ruled that the Dreher transducer is in the ear, rather than adjacent the ear; that a multiple inclusion of three claimed elements would all be contained in the Dreher earmold if the Larkin claim is read on the Dreher headset; and that the entire Dreher ear tube, rather than just one end of it, extends into the ear canal. (App. 1074)

The district court's finding that the Dreher transducer is in the ear, rather than adjacent to it, is plainly wrong. While the Dreher earmold itself is in the wearer's ear, the stem portion 15 of the transducer case 16 snaps into the earmold, as shown in Fig. 4 (tab BE), and the transducer case 16 rests outside and adjacent the ear. An analogous situation is presented by the platform-type earcaps where the transducer-containing housing rests on the ear, such as in Olney patent 2,485,405, where the transmitter and receiver unit is said to be supported "adjacent the ear of the user". (Ex.App. 655, col. 14, lines 7-9)

The district court's observation that there is a multiple inclusion in that the claimed support means, as well as the ear tube and the means for attaching one end of the ear tube to the receiver, are all formed by the Dreher earmold, does not appear to be germane to the issue of anticipation, since Larkin claim 1 is clearly sufficiently broad to cover the recited elements whether they are contained in



several members or one composite member. In any event, however, the portions of the Dreher headset that constitute these elements are clearly separable. Thus, there is a support means in the form of a forward retaining finger 12, which fits underneath the ear flap and holds the earmold and the headset in place, an ear tube in the form of a sound passage 18 through the main portion of the earmold, and means, in the form of the stem portion 15 of the transducer case and an annular engaging ring 17 within the socket 14 of the earmold, for attaching the outer end of passage 18 to the transducer 16. Also, the other end 11 of the ear tube, but not the entire ear tube 18, is shaped and adapted to plug into the ear canal. See the claim chart at tab EE.

The district court also observed that the stability of the Dreher headset is also highly questionable -- but the only testimony of record concerning this point, in relation to the later M-61 earmold headset, is contrary. (App. 932)

Thus, the Dreher headset, as the Pritchett headset, clearly anticipates Larkin claim 1. Further, if a different type of earmold is desired, where the ear tube is not integral with the earmold, one was available prior to 1961.

(See, e.g., Fig. 1 of Henderson patent 2,939,923.) (Ex.App. 725)

Obviousness. While the Pritchett and Dreher patents are urged to constitute complete anticipations of Larkin claim 1,

if they fall short of this, they clearly render the invention of this Larkin claim obvious under 35 USC 103.

For purposes of this appeal, defendant will rely upon two combinations of references both explicitly taught by the prior art, each such combination forming the headset claimed in the Larkin patent.

The first of these combinations involves Olney patent 2,485,405 (tab CC) and a 1957 publication (tab FF) by Aeronautical Radio, Inc. (ARINC), a corporation whose principal stock is held by the major U.S. airlines (Ex.App. 643, 680), while the second involves a Telex boom-mike headset with ear tubes (tab HH) and British patent 716,801, published in 1954. (Tab II) (Ex.App. 675, 702)

The Olney patent (tab CC), filed in 1944, shows a telephone-operator's headset with an earcap over one ear. A housing 1 attached to the earcap supports a "small" mike and receiver "adjacent" the ear. (Ex.App. 649, col. 1, lines 15-18; 651, col. 5, lines 33-4; 655, col. 14, lines 7-9) The illustrated headset has two voice tubes 15, 16 extending from the mike down to the wearer's mouth, and a mouth-piece 17, rather than just a single open-ended tube, in order to effect a cancellation of the background noise. The patent states, however, that where noise cancellation is not required a single voice tube can be used, without the mouth-piece -- as in the Larkin headset. (Ex.App. 653, col. 10, lines 58-74)



While the Olney headset used an earcap, rather than an ear tube, some time after Olney's work, but prior to Larkin, a Telex inventor, Gilbert, proposed using a miniature hearing aid transducer with an ear tube in a headset (see Gilbert patent 2,586,644, Ex.App. 670), and Telex announced this ear tube headset, the "Twinset", as "an entirely new way to hear with a headset! You forget you're wearing it. Never before such comfort, lightness, all-day-long ease of use." (Ex.App. 675)

Thereafter, the 1957 ARINC publication (tab FF) entitled "Lightweight Headset and Boom Microphone" showed on page 8 "One Possible Arrangement" for a boom-mike headset, which, by a double-ended arrow, called specific attention to the equivalence between the earlier earcap arrangement of the Olney patent and the Telex ear tube arrangement, in the context of a lightweight headset. (Ex.App. 690)

If one were designing a headset in 1961 and he had the Olney patent and page 8 of this ARINC report in mind, it is difficult to see how he could fail to realize that an ear tube could be substituted for the Olney earcap. Indeed, this was not only obvious, but specifically taught by these documents\*.

Plaintiff's expert, Mr. Romanow, was evasive as to how

---

\* A claim chart applying the first and second prior art combinations to Larkin claim 1 is attached hereto at tab GG.

he would evaluate what these references taught a man of ordinary skill in the art. This testimony was as follows:

"Q Well, just taking a factual situation, if you gave an ordinary man, an ordinary engineer in your group or in another group and you handed him this page 8 and you handed him the Olney Patent and he came back and he said, instead of using the earcap, I used the ear tube. Would you think that he had made a remarkable advance? Or would you think --

A I don't understand the question.

Q If you handed him these two, and I am making that the supposition of the question, and he came back and instead of implementing Olney exactly as shown in the Olney figure, he replaced the earcap there by the earpiece which is shown in the ARINC article, would you think he had done in terms of ideas, what to use -- would you think he had done something just routine or something way beyond that?

A Well, when Larkin did it, we thought he did quite a nice piece of work there.

Q Do you know whether Larkin had both of these in front of him at the time?

A I have no way of knowing that." (App. 352-3)

Turning to the second prior art combination\*, this involves the Telex lightweight boom-mike headset (tab HH), which effectively added a boom-mike to the Telex ear tube headset already discussed. Thus, it included a receiver adjacent the ear, with an attached ear tube, and a small-diameter boom extending forwardly to support the mike in front of the wearer's mouth. The weight of the mike at the

---

\* See footnote, p. 49.



end of the lightweight boom, however, made this headset unstable -- in the sense that the mike would not follow movements of the head.

Mr. Leonhardt of United obtained a prototype of this Telex headset in 1960, when he was looking for a lightweight headset. He testified that United's reaction to it was quite favorable; that it was relatively rugged, lightweight, and quite comfortable to wear, and the only real objection was the large boom microphone in front of the mouth -- from a mass standpoint. It would not stay in place if you moved your head. (Ex.App. 1092-3; Opinion, App. 1071, 1082)

This problem is specifically discussed in British patent 716 801 (tab II hereof), published in 1954, and the solution were described as follows:

"It is known, in an operator's headset to use a miniature microphone mounted on an adjustable boom secured to the receiver [as in the Telex lightweight headset] . . . It is difficult with this arrangement to avoid disturbing the adjustment of the boom when the head is moved due to the inertia of the microphone.

"It is now proposed to fix the microphone to the head harness and extend the sound inlet by means of a flexible duct terminating in a flare opposite the mouth." (Ex.App. 705, lines 85-97)

This British patent also states that:

". . . it is proposed to mount the microphone on

the headband and to provide an adjustable acoustic duct terminated by a small mouthpiece for sound transfer from the mouth to the microphone." (Ex.App. 704, lines 45-9)

Again, if one were designing a headset in 1961, or even attempting to correct the wandering mike problem in the otherwise acceptable Telex lightweight headset, and he had in mind the Telex lightweight headset, or the Telex flyer (tab HH), and this British patent (tab II) teaching that the solution to the wandering boom-mike problem in a lightweight headset is to "mount the microphone on the headband" and "provide an adjustable acoustic duct . . . from the mouth to the microphone" -- it is difficult to see how he could fail to realize that a voice tube should be used in place of the Telex boom mike. Again, this seems not only obvious from these references but specifically taught by them.

The district court stated that viewed retrospectively the Larkin invention would seem an obvious combination of old elements. (App. 1066) Also, the court proposed adding the Olney voice tube to the Guttner hearing aid, and rewiring Guttner to operate as a headset -- but observed that no such combination was suggested by either of these references. (App. 1076)

While no such combination was suggested in the references the district court selected, this is not true of the references discussed above, which specifically suggest, and indeed teach, that:



(1) the earcap of the Olney headset can be replaced by the later-developed Telex ear tube for headsets. If this was not clear to one having in mind the Olney headset when the Telex ear tube was announced as a comfortable, lightweight, new way to hear in headsets, it certainly became clear when ARINC publicized these two earpieces as alternatives in lightweight headsets; and

(2) that the solution to the wandering boom-mike problem in the Telex ear tube headset is to attach the mike to the headband and use a voice tube.

Thus, the district court's ruling of nonobviousness as to the Larkin patent, which is reviewable by this court as a question of law, is in error and should be reversed. Shaw v. E.B.&A.C. Whiting Company, 417 F.2d 1097, 1102 (2 Cir. 1969); Julie Research Laboratories, Inc. v. Guildline Inst., Inc., supra, 501 F.2d at p. 1136.

While a presumption of validity normally attends an issued patent, under 35 USC 271, this presumption is seriously undermined since pertinent prior art was not considered by the Patent Office, Formal Fashions, Inc. v. Braiman Bows, Inc., supra; and since the Patent Office was misinformed as to the true import of the Dreher patent. Kahn v. Dynamics Corp. of America, supra. In any event, however, the Larkin patent is invalid for obviousness, as well as being anticipated by the prior art.

Secondary Factors. The plaintiff relies principally upon secondary factors to sustain the validity of the Larkin patent, but these factors are irrelevant to the question of anticipation, and, with regard to the question of obviousness, it has long been settled that these factors are of no consequence where, as here, obviousness is clearly established. A&P Tea Co. v. Supermarket Corp., 340 U.S. 147 (1950); Anderson's-Black Rock v. Pavement Co., 396 U.S. 57 (1969); Formal Fashions, Inc. v. Braiman Bows, Inc., supra, 369 F.2d at 539; Julie Research Laboratories, Inc. v. Guildline Inst., Inc., supra, 501 F.2d at p. 1131.

While the district court correctly found that a need for a lightweight headset existed for some time prior to 1961, the record is clear that this need existed in an industry where the market was extremely small, i.e. the aircraft industry. Consequently, although the technology existed in the prior art, there was no market impetus to justify the effort and expense to bring it forward in a commercial product. Cf. Preuss v. General Electric Company, supra.

As already discussed, Mr. Trumbull of United Airlines, plaintiff's witness and past board member, testified that the companies contacted by United in late 1960 were not interested "not because they were dumb but because they didn't see any market". Also, he testified that there was not enough of a market "to bother with" (Ex.App. 1102), and this



was confirmed by Mr. Leonhardt of United, who indicated the scope of United's intended purchase in 1961. (Ex.App. 1095)

Mr. Larkin was not aware of the limited market and therefore he proceeded where others would not. He testified that he thought the airline industry presented "a pretty good market" but, "As [it] turned out, there isn't much of a market" there. (DX-JJ, pp. 111-12) As a consequence, plaintiff lost money for four years -- in the amount of about \$350,000. (App. 425-7)

Nor is there any evidence of any unsuccessful attempts by others to design a lightweight headset -- except that there was not enough of a market to warrant the final engineering or packaging of the units proposed.

The only exception to this is the Telex lightweight boom-mike headset, which was comfortable, lightweight, etc., as already discussed, but had a wandering mike (tab HH), and the prior art taught the solution to this problem prior to Larkin's work (tab II) -- so that this was not a failure by one having the prior art in mind. Formal Fashions, Inc. v. Braiman Bows, Inc., supra; Preuss v. General Electric Co., supra; Rains v. Niaqua, Inc., supra.

United Airlines did not undertake to solve the problem internally, but, instead, decided to purchase a commercial unit -- which was not available. Mr. Leonhardt testified that the program initiated in August of 1960, to survey the

market for a lightweight headset, was the first headset program at United, except for the Flight Operations people trying a couple of headsets before they turned the project over to Engineering. (Ex.App. 1091-2) Moreover, there is no indication in the record that United had any headset designers, nor any likelihood of this.

Nor did the FAA undertake to solve the problem internally. Rather, it purchased existing units, such as the Telex Twinset, planning to modify them for their needs, but the intended modifications were never even started before plaintiff came along with its lightweight headset which the FAA found acceptable. (Ex.App. 1189) Further, the record shows no headset development work at NASA.

With regard to the telephone industry, even though plaintiff's expert, Mr. Romanow, headed up the acoustic department at Bell Laboratories (App. 220-1), there is no indication in his testimony of any effort to make a lightweight headset until after they had learned of the so-called Larkin (MS-50) headset and attempted to improve upon it. (App. 242, 297) Indeed, the parties have stipulated, as an Agreed Fact, that the development work at Bell Laboratories prior to 1963 concentrated mainly on modifications of the existing Western Electric WE-52 headset. (Agreed Finding P-10.9 at App. 116) While the record shows activity in the telephone industry in England to develop a lighter headset,



this effort resulted in a headset using a horn-shaped voice tube and an earcap, rather than an ear tube, which was adopted as a standard for British telephone operators, and is still in use, and with which plaintiff's exclusive licensee in Europe for the MS-50 headset was unable to compete. (Opinion on Motion, App. 60).

Plaintiff cites the failure of the Bell Laboratories Model Y-1 headset, which was an experimental headset of precisely the same design as the headset adopted as standard for British telephone operators. While the Y-1 development could not qualify as a prior failure of others, since it was designed after the MS-50 (App. 242), there is also no indication that this headset failed because of its design. Rather, according to Mr. Romanow, it had very limited adjustability, no forward and back adjustment at all, a weight only 2 or 3 ounces less than the 9.8 ounce WE-52 headset, and an inferior frequency response. (App. 242, 354-5; Ex.App. 63) A better comparison would involve the fully-developed British telephone operator's headset of the same design, which was fully adjustable (Ex.App. 779), weighed only 4 ounces (Ex.App. 701, line 46) and had a "superior" transmission performance. (Ex.App. 695) As already noted, plaintiff's licensee for the MS-50 in England was unable to compete with this headset.

Plaintiff also refers to a failure at Ohio State University Research Foundation, which is baseless. This Research

Foundation had an Air Force contract for work by the Department of Speech of the University, in speech transmission and intelligibility -- not headset development. (Ex.App. 728) A published report issued in the course of this project states that a pilot at Palm Beach Air Force Base had suggested a headset with a voice tube and an ear tube -- which fully anticipates the Larkin headset, except that the pilot did not have a miniature mike and, therefore, he clipped a standard-issue mike to his shirt and brought the voice tube to it. (Ex.App. 732) The report states that it was in connection with this experimental headset that the Ohio State Speech Department was contacted for conducting some flight tests on available miniature microphones. (Ex.App. 733)

In addition, in the course of the Ohio State project, Dr. Dreher of the Speech Department suggested the earmold-mounted headset of the Dreher patent 2,904,640 already discussed, the configuration of which later became the Bell Model 61 headset. Thus, while the Ohio State work did involve headset development, it produced two viable headset suggestions, one of which was a full anticipation of the Larkin headset, absent the miniature mike then under test.

Nor was there any failure at Roanwell. Its lightweight headset project in the early 60's was from the outset directed to the design of a lightweight version of a



circumaural\* headset then on the market. (App. 371, 376) Indeed, at about the same time, defendant developed a lightweight circumaural headset using a voice tube rather than a boom-mike, and it was about the same weight as plaintiff's. (Ex.App. 761; App. 393) Moreover, plaintiff introduced no evidence to show that its circumaural unit was in any way superior to defendant's.

Plaintiff also alludes to the fact that Mr. Gaston Marchand, an acoustics expert formerly employed by defendant, had a model of a horn-type headset made and tested, and a report written, in the early 1960's -- after the same headset configuration had been commercialized in England. This has no relevance to the present suit.

Plaintiff also makes much of a 1959 report to the Air Force. (Ex.App. 797) The significance of the report is purportedly that many of the country's best acoustics experts, including defendant's expert Dr. Martin, consulted as a panel of experts on a project in the late 1950's involving communications in military aircraft, and recommended communications equipment for further investigation, but the recommended equipment did not include the headset of the Larkin patent. Thus, presumably, Larkin came up with a headset design that had escaped the experts.

---

\* "Circumaural" signifies a large earmuff-type earpiece which surrounds the outer ear, such as used with hi-fi equipment and elsewhere.

The problem being addressed on this Air Force project was the weight and discomfort of the equipment that had to be worn on the head of an Air Force pilot -- which consisted of a large helmet with internal communications equipment, the helmet necessarily being of the type that could be quickly pressurized. (Ex.App. 807) The aim of those involved in the communications portion of the project was to select communications equipment that could be located at unoccupied spaces within the helmet, having in mind the high noise environment of the military aircraft involved -- so as to permit a reduction of the space within the helmet and, consequently, the size and weight of the overall helmet. (Ex.App. 805)

The fallacy of the plaintiff's argument concerning this report, which the district court seems to have accepted, is twofold. First, the function of the panel of experts, as set forth in the report itself, and described by Dr. Martin, was to list all possible means of speech projection and reception, and to suggest research studies on "untried or novel means of communication". (Ex.App. 808; App. 701-2) Consistent with this function they prepared a list of all possibilities, from the most ordinary to the most esoteric. (Ex.App. 813-813A; App. 697-700) Included among this list, as the second most common approach in both transmitting and receiving, was the use of sound tubes. (App. 701) Their



recommendations for future research and development, however, involved the "untried or novel" approaches that appeared to have sufficient promise to warrant further research, i.e. a tooth mike, a noise-cancelling mike and a forehead mike -- since these had not already been fully researched. (Ex.App. 118; App. 701-2) They did not recommend future research on approaches that had been fully researched, and which might require only applications engineering to put them into a product. Thus, they did not recommend research on sound tubes or any of the others which were high on the list of well-knowns.

Secondly, if plaintiff has any proof that the headset of the Larkin patent solved the problem being addressed in this Air Force project, i.e. that of communication from inside a pressurizable helmet -- or even that the Larkin headset has ever been used in such an environment -- plaintiff has been singularly silent as to what that proof might be. Indeed, when plaintiff delivered headsets to NASA for use inside an astronaut's helmet, it was not the voice-tube ear-tube headset of the Larkin patent that was delivered, which plaintiff had as an off-the-shelf item at the time, but a specially designed voice-tube earcap headset as in the prior art Olney patent (the earcap actually being a circumaural earmuff). (Ex.App. 761, 767; App. 428-9) According to plaintiff's vice president, Mr. Spragens, that was the way NASA "wanted it configured". (App. 429)

While Mr. Spragens testified on direct that in the space flight of Mercury Astronaut Gordon Cooper, plaintiff supplied the receiver as well as the mike (App. 410-11), on cross-exam he explained that the receiver was clamped to the outside of the earmuff (i.e. the configuration of the prior art Olney headset), and that there was "no tube or ear insert device at all". (App. 428-9, 761) Indeed, on later space flights, where the MS-50 was carried on board the spacecraft, and used when the astronauts removed their helmets, a separate mike and receiver were employed when the helmets were being worn. (App. 411)

Actually, an ear tube is impractical if not actually dangerous within the pressurizable helmet environment of military aircraft. When the helmet is being operated unpressurized, any sudden cabin pressure change, which is an expected condition for military aircraft, might well move the eartip further in or out of the ear, thus interfering with communications at a crucial time -- and the eartip is not accessible for adjustment without removing the helmet. And the same is true if high-gravity forces in a turn or a dive cause the eartip to move further in or out of the ear. When the helmet is being operated pressurized, the eartip is totally inaccessible; if it becomes dislodged, because of careless placement or high-gravity forces or chewing, all communication would be lost so long as the pressurized



condition must be maintained. Further, whether the helmet is being operated pressurized or not the eartip does not provide adequate protection to the ear against damage from loud blast-off or take-off noises.

Thus, contrary to the impression the district court seems to have obtained, the headset of the Larkin patent provided no answer whatever to the problem being considered by the panel of experts, namely that of communication from within a pressurizable helmet in a military aircraft -- and there is no evidence of record that it solved this problem.

Plaintiff has also urged that various technical problems may have led people away from the use of voice tubes in headsets, but there is no evidence that any of the supposed deterrants were viewed as such by those skilled in the art. Rains v. Niaqua, Inc., supra; Lemelson v. Topper Corporation, supra; Vanity Fair Mills, Inc. v. Olga Company, supra.

Indeed, voice tubes in headsets were specifically taught by Pritchett, Olney, Dreher, British patent 716,801, and others.

Plaintiff also points out that it has sold over 700,000 MS-50 headsets, but the effectiveness of these sales as indicia of nonobviousness, even if that issue were in doubt, is seriously diminished by plaintiff's substantial loss over its first four years of operation. This loss dispels the existence of any market incentive to design and introduce new headset products in the market plaintiff entered.

Moreover, plaintiff's MS-50 sales are not properly attributable to the invention claimed in the Larkin patent. Cf. Lorenz v. F.W. Woolworth Co., 305 F.2d 102 (2 Cir. 1962). As testified by Mr. Larkin in the Bowman v. PPI suit, the headset disclosed in the Larkin patent was inoperative; it "would never from the beginning work with both the microphone and receiver plugged in. We never got past that point." (DX-JJ, p. 73) As a consequence, Audiotone re-engineered the unit to make the MS-50. Larkin testified that "They [Audiotone] supplied the MS-50 type of headset." (DX-JJ, p. 61, Ex. 8A)

Not only was the headset of the Larkin patent redesigned by Audiotone, the clip and headband were also "completely redesigned" for the commercial MS-50 headset. (DX-NN, pp. 46-7, Ex. 22) Mr. Trumbull of United explained that when the headset delivered by plaintiff was clipped onto the bar of the headband "it slid around and didn't stay where it was put"; it failed to hold the capsule in the right position, so that transmission was lost. (DX-NN, pp. 44, 47) Although the Larkin patent application was filed in December of 1961, this redesign was still in progress in November of 1962. (DX-NN, p. 46, Ex. 21)

Thus, the commercial success ultimately enjoyed by the MS-50 headset, as well as any positional stability it achieved, were not due to the idea of using sound tubes in

the claimed configuration -- which was taught by the prior art -- but to the product engineering of the headset, which was performed by Audiotone and others, after unsuccessful attempts by Larkin.

The district court refers to a Roanwell engineering memo concerning the MS-50 headset, which states that the MS-50 "may well be one of the first of a new generation of headsets". The basis for this tribute was the fact that the MS-50 was the first of its configuration to reach the market, not because it was a nonobvious construction. (Ex.App. 51) Cf. Preuss v. General Electric Co., supra, 392 F.2d at p. 36. Thus, the same memo speaks of the appreciable acceptance the MS-50 headset has received in a short time, referring to Project Mercury, which actually used the prior art Olney headset. It thus gives credit to plaintiff for Project Mercury, rather than to Olney, since plaintiff was the first to market the headset of the Olney configuration. (Ex.App. 761, 767)

The district court observed that after planning and tooling to market an MS-50 type headset, defendant abruptly terminated this project in December of 1965, and that the reason for this termination was apparently plaintiff's letter the preceding July saying that any infringement of the Larkin patent would result in appropriate legal action. (Opinion at App. 1089) While the reason thus assessed is largely



surmise, it is also incorrect, and indeed, it is contradicted by the district court's finding that the defendant relied upon the advice of counsel, conveyed to plaintiff by a letter of August 19, 1965, that all of the relevant claims of the Larkin patent in suit are invalid. (Opinion at App. 1126)

In summary, there is no history of people unsuccessfully attempting to solve any problem which was solved by the claimed Larkin invention. Rather, the invention was disclosed in the prior art, but there was an insufficient near-term market to warrant anyone taking the necessary steps to produce and market such a headset. And, further, the headset of the Larkin patent was inoperative, and positionally unstable, until it was re-engineered by the engineers at Audiotone, and its clip redesigned. This same product engineering could equally well have been performed on the prior art units dating back to 1878 -- to effect the same device.

Enforceability. As indicated at the outset of this brief, plaintiff's motion to strike paragraph 17 and a portion of paragraph 18 of the defendant's Answer, made shortly before the trial in this case, was granted and a written opinion filed on the second day of trial. (Opinion on Motion, App. 59)

The defense raised by the stricken paragraphs was principally directed to a fraudulent Larkin British patent application, and a restrictive exclusive license for Europe

based thereon, both of which were predicated upon the invention of the Larkin patent for which plaintiff seeks exclusivity in this suit.

While the district court assumed, without deciding, that "the British patent was obtained by fraud" and found the exclusive license based on it to be "clearly anti-competitive", the court held that these fraudulent and restrictive activities in plaintiff's dealing with its alleged invention, cannot impede plaintiff's right to exclusivity for the same invention under its U.S. patent. (Opinion on Motion, App. 59, 60)

Although the parties were advised prior to the commencement of trial that this issue would be stricken from the Answer, the following relevant documents were received in evidence:

1. depositions of plaintiff's past patent attorney, Mr. Jean Chognard (Ex.App. 1104), whom the district court incorrectly characterized in its opinion as a "disgruntled former employee" -- presumably confusing Mr. Chognard with Mr. Bowman, who sued plaintiff claiming to have originated the voice tube headset; (Opinion on Motion, App. 59)
2. sample PPI ads from issues of Business Week and the Wall Street Journal, which predate the filing of the

- Larkin British application\* (Ex.App. 759-60); and
3. admissions by plaintiff as to the availability of certain trade publications in England prior to the filing of its Larkin British application. (Ex.App. 1197)

Also, a proffer was made of the following documents after plaintiff's objection to them was sustained:

4. an exhibit marked DX-II(1) to (19) which includes a copy of the relevant Larkin British patent 1,009,818, a 1965 exclusive license based thereon, a superseding 1968 exclusive license agreement, and various correspondence and other documents. (Ex.App. 1010)

The operative facts concerning this point are that on August 25, 1964, almost three years after the filing of the Larkin patent application in the U.S. Patent Office, plaintiff filed a corresponding British application -- since it was then negotiating an exclusive license with a British company, S.G. Brown, Ltd., and Brown insisted that there be some patent coverage in Europe. (Ex.App. 1010, 1179, 1182)

---

\* The six-digit numbers and designations July XX 1972 appearing on these ads signify that they were produced by plaintiff in July of 1972, in the course of the discovery in this suit. No action, however, was taken by plaintiff to abandon the Larkin British patent in question until November of 1974, some 2-1/2 years later, when it became clear from defendant's motion to compel discovery that defendant intended to pursue this issue.



Since the British application was not filed within a year of the Larkin U.S. filing date, it was no longer entitled to the benefit of its U.S. filing date, as an International Convention priority date. Thus, any publication of the headset in the United Kingdom prior to the actual British filing date, would constitute a bar -- which is a fact well known to U.S. patent attorneys. British Patents Act, 1949, §7, 50.

Before filing the British application Mr. Larkin contacted his then patent attorney, Mr. Chognard, and inquired whether it was possible to obtain a British patent, and Mr. Chognard advised him that a valid British patent was barred. (Ex.App. 1134, 1179-80) Thereafter, without advising Mr. Chognard, Mr. Larkin filed a British application through a British patent agent (which later became Larkin British patent 1,009,818), and he concluded a restrictive exclusive license agreement for all of Europe based upon this knowingly fraudulent application. (Ex.App. 1181, 1010, 1015, 1017) The agreement was dated February 5, 1965, and later superseded by an exclusive license agreement dated July 1, 1968. (Ex.App. 1020)

The 1965 agreement granted S.G. Brown an "exclusive license" in Great Britain, France, Italy, Belgium, Germany and Holland for a five-year period, with a right to renew for an additional five years. Plaintiff agreed to "seek

patent coverage" in these countries, even though it had already been advised that patent coverage was barred. And S.G. Brown, in turn, agreed "not to dispute the validity of any patents obtained by PPI", thus forestalling any attack by Brown on the fraudulent Larkin British patent or any other patents plaintiff might acquire. (Ex.App. 1017)

The 1965 agreement refers to an attached Schedule I, which presumably listed the Larkin U.S. and British patent applications, but plaintiff has been unable to find this document. However, on the effective date of the 1965 agreement, the only patent right plaintiff had in any of the licensed countries was the then recently-filed Larkin British application.

The 1968 agreement granted S.G. Brown an exclusive license to manufacture in Great Britain and an exclusive right to sell to Public Telephone Administrations in the United Kingdom and four other countries -- together with a nonexclusive license to sell to other purchasers in these and many other countries. While this agreement identifies the Larkin U.S. and British patents, in an attached Appendix A, the agreement was not limited to products covered by plaintiff's patents. Rather, the "Licensed Products" were defined as all headset products manufactured and marketed by plaintiff for general use in communications applications, and all modifications and variations thereof, with certain exceptions

as to Government sales and the like, and all components and replacement parts used in such headsets. (Ex.App. 1021, 1037)

The 1968 agreement contained a specific provision that S.G. Brown would not export these "Licensed Products" outside the licensed territory, without prior written approval from plaintiff (Ex.App. 1022) -- the only colorable power for this constraint, insofar as it applied to the United States, being the Larkin U.S. patent in suit, even though the constraint was not limited to patented headsets or parts.

Moreover, the effectiveness of this broad proscription against exportation to nonlicensed countries was augmented by the provisions of paragraph 10(g), which gave plaintiff an exclusive license grant-back option outside the Licensed Territory on all future Brown inventions or improvements in the Licensed Products. (Ex.App. 1027-8)

Further, the 1968 agreement included a three-year post-termination clause which provided that S.G. Brown would not, directly or indirectly, for three years after the date of termination of the agreement, manufacture or sell any of the Licensed Products, or direct copies or direct derivations, either in the licensed territory or in any area of the world in which the plaintiff or its designee is then selling such products. (Ex.App. 1032) Insofar as the U.S. market is concerned, this latter constraint was also imposed through



the colorable power of the Larkin U.S. patent in suit. Cf. United States v. Imperial Chemical Industries, 105 F.Supp. 215, 221 (SDNY 1952).

In its consideration of the Larkin British patent, apart from the exclusive licenses based upon it, the district court ruled that fraud in obtaining one patent will not render other patents in common ownership unenforceable, even where the patents cover closely related inventions (here the same invention). Citing its earlier decision in Saxton Products, Inc. v. United States Telephone Co., 182 USPQ 608 (SDNY 1974) (not otherwise reported). Such a broad pronouncement, however, for all imaginable fact situations, is not supportable in reason or authority. Thus, in the famous Keystone Driller case the Supreme Court held fraud in the suppression of prior art as to one of the patents in suit to bar relief on the five closely related patents (the tainted patent having been held invalid in an earlier suit, while the prior art was being suppressed, and reliance placed on that validity holding in an application for a temporary injunction in the instant suit). Keystone Driller Co. v. General Excavator Co., 290 U.S. 240 (1933); discussed in Chromalloy American Corp. v. Alloy Surfaces Co., 339 F.Supp. 859, 875 (DC Del. 1972). Also, in Precision Instruments, the court held fraud in suppressing evidence of perjury in an interference proceeding before the Patent Office,

which apparently involved only one of the three patents in suit, to bar relief as to all three. Precision Instruments Co. v. Automotive Co., 324 U.S. 806 (1945). Also, see East Chicago Machine Tool Corp. v. Stone Container Corp., 181 USPQ 744, 748 (DC Ill. 1974) (not otherwise reported).

Moreover, we are not here dealing merely with one patent in relation to another, but with plaintiff's activities involving the alleged invention for which it is seeking both recognition in the form of damages and the equity-based extraordinary remedy of injunctive relief.

Nor are we dealing with activities which stopped at acquiring a fraudulent foreign patent on the invention for which protection is here sought. Instead, the fraudulent foreign filing is coupled with an exclusive license for most of Europe, with a prohibition against challenging plaintiff's ill-gotten patents, a restrictive provision against exporting to the United States or elsewhere outside the licensed area, both as to patented and unpatented items, and a post-termination provision which extends a blanket restriction against competition by the licensee three years beyond the life of the agreement. Neither S.H. Kress & Company v. Aghnides, 246 F.2d 718 (4 Cir. 1957) nor the other cases relied upon by the district court involved a deliberate plan such as plaintiff's, to fraudulently extend the monopoly for its U.S. based invention to foreign countries and knowingly predicate

an exclusive agreement upon the fraudulent British patent application, to control both trade in the relevant countries and exportation to the U.S. -- while, thereafter, seeking the affirmative relief of the courts to enforce its exclusive rights in the invention.

Turning to the license agreement itself, while the district court correctly found that the 1968 agreement was terminated August 30, 1972, its finding that any misuse by the plaintiff had thus been purged, ignored the 3-year post-termination clause of paragraph 15(f), which was specifically referred to in the letter of termination -- which extended to August 30, 1975. (App. 60; Ex.App. 1063) Moreover, if it is plaintiff's contention that the misuse ceased last August 30, and that its effects have dissipated since that date, the burden of proving this falls on plaintiff. B.B. Chemical Co. v. Ellis, 314 U.S. 495, 498 (1942).

Nor is it clear that misuse based upon fraud, such as fraudulently obtaining a patent and knowingly predicating a restrictive exclusive license thereon, can be purged. See Kearney & Trecker Corp. v. Cincinnati Milacron, Inc., 184 USPQ 134, 152 (DC Ohio, 1974) (not otherwise reported) which quotes from an article by plaintiff's present attorney, Mr. Arnold, that:

"It is equally clear that at least some anti-trust violations, like fraudulently procuring and enforcing a patent, are not 'misuse' that can be purged."



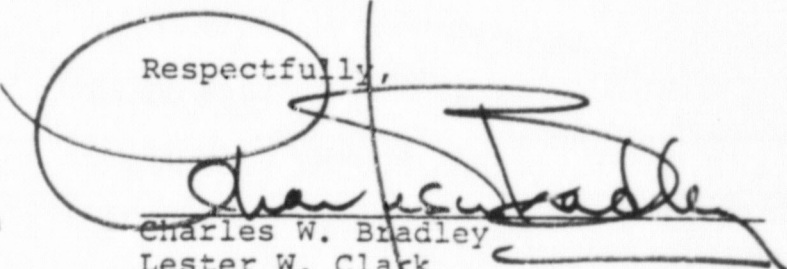
Thus, the district court's ruling striking this defense should be reversed and, unless rendered moot by a ruling of invalidity of the Larkin patent by this court, this case should be remanded to the district court for a trial on this issue.

#### CONCLUSION

For the reasons stated, the judgment of the district court should be affirmed insofar as it holds invalid the Hutchings patents in suit, but reversed insofar as it holds the Larkin patent valid, since this patent is both anticipated by, and obvious in view of, the prior art of record in this case. 35 USC 102 and 103.

In addition, the district court's order striking paragraph 17 and a portion of paragraph 18 of the Answer should be reversed, and unless rendered moot by a holding of invalidity of the Larkin patent, the issues raised by these paragraphs remanded to the district court for trial.

Respectfully,



Charles W. Bradley  
Lester W. Clark  
COOPER, DUNHAM, CLARK, GRIFFIN  
& MORAN  
30 Rockefeller Plaza  
New York, New York 10020  
(212) 977-9550  
Attorneys for Defendant-Appellee

March 15, 1976

# United States Patent Office

Des. 218,173  
Patented July 28, 1970

218,173

## COMBINED MICROPHONE AND RECEIVER INSTRUMENT

Kenneth J. Hutchings, Soquel, Calif., assignor to Pacific Plantronics, Inc., Santa Cruz, Calif., a corporation of California

Filed June 16, 1969, Ser. No. 17,718

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D26-14

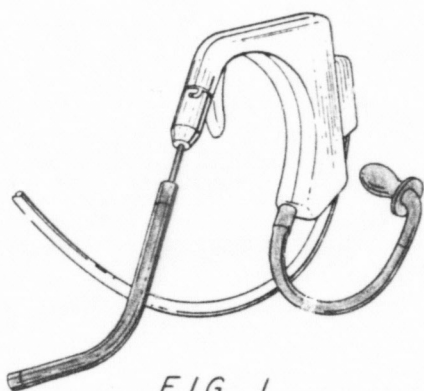


FIG. 1

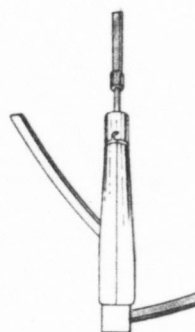


FIG. 4

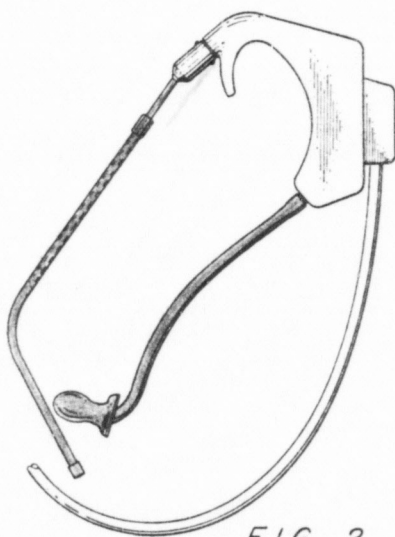


FIG. 2

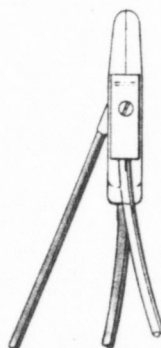


FIG. 3

FIG. 1 is a perspective view of the combined microphone and receiver instrument;

FIG. 2 is a side elevational view of the combined microphone and receiver instrument;

FIG. 3 is a rear elevational view of the combined microphone and receiver instrument; and

FIG. 4 is a top plan view of the combined microphone and receiver instrument.

The tubular members are fragmentarily shown for ease of illustration.

I claim:

The ornamental design for a combined microphone and receiver instrument, substantially as shown and described.

### References Cited

#### UNITED STATES PATENTS

D. 159,223	7/1950	Olson	D26-14
2,993,962	7/1961	Hothem	179-156
3,327,807	6/1967	Mullin	181-23

BERNARD ANSHER, Primary Examiner

Ex. App. 13

# United States Patent

[11] 3,548,118

[72] Inventor **Kenneth J. Hutchings**  
Soquel, Calif.  
[21] Appl. No. 839,016  
[22] Filed July 3, 1969  
[45] Patented Dec. 15, 1970  
[73] Assignee **Pacific Plantronics, Inc.**  
Santa Cruz, Calif.  
a corporation of California

3,184,556 5/1965 Larkin..... 179/156  
3,280,273 10/1966 Flygstad..... 179/156  
3,440,365 4/1969 Bryant et al. .... 179/156  
3,457,376 7/1969 Kreisel et al. .... 179/156

Primary Examiner—William C. Cooper

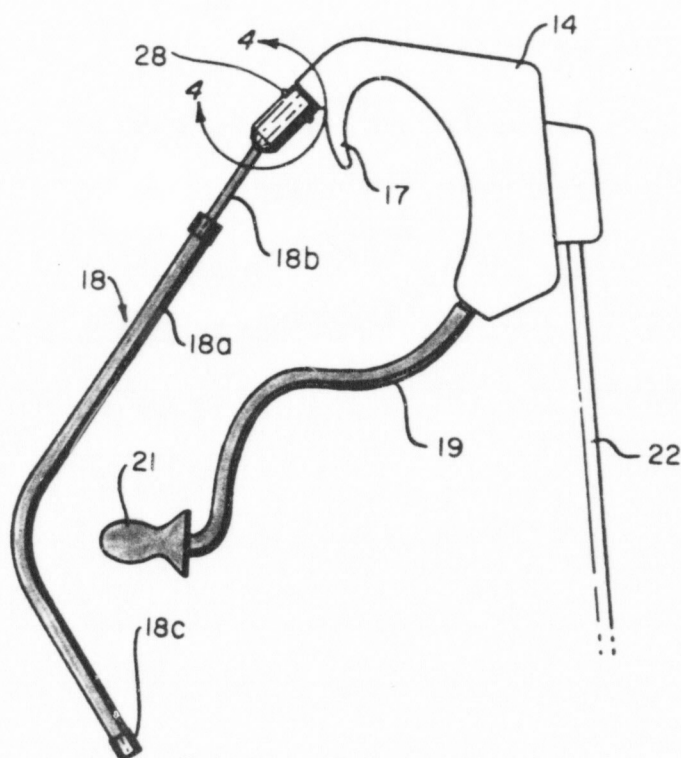
Attorney—Flehr, Hohnach, Test, Albritton & Herbert

## [54] SELF-SUPPORTING HEADSET 7 Claims, 4 Drawing Figs.

[52] U.S. Cl..... 179/156  
[51] Int. Cl..... H04m 1/05  
[50] Field of Search..... 179/156

[56] **References Cited**  
**UNITED STATES PATENTS**  
2,904,640 9/1959 Dreher et al..... 179/156

**ABSTRACT:** A self-supporting headset having a housing which accommodates a receiver and microphone. A flexible acoustic tube adapted to communicate between the auditory canal of the ear of the user and the receiver secured to the bottom of the housing, and an adjustable acoustic tube secured to the top of the housing with its distal end adapted to be disposed adjacent the mouth of the user to transmit sound to the microphone.



Ex. App. 7



April 22, 1969

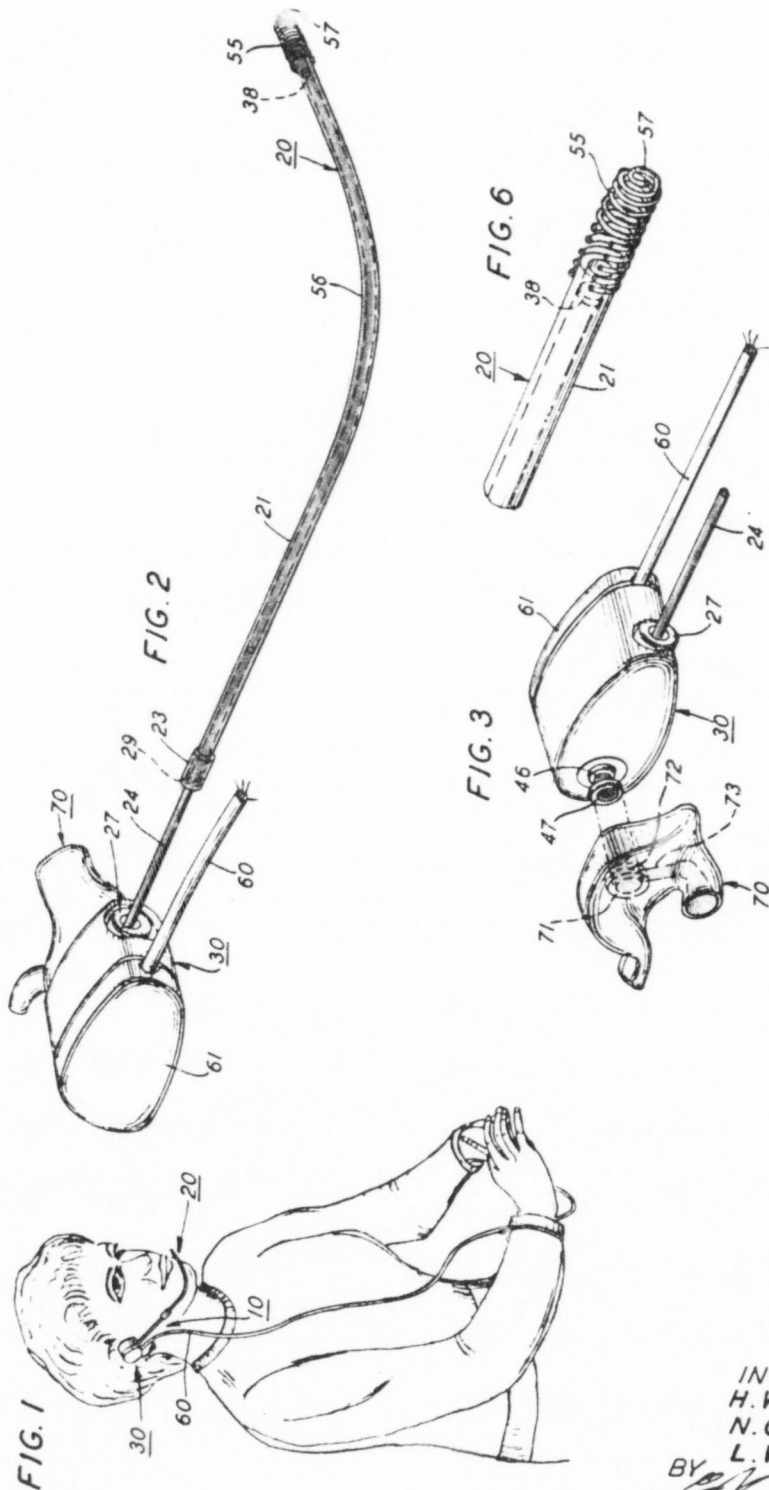
H. W. BRYANT ET AL

3,440,365

TELEPHONE HEADSET WITH ADJUSTABLE SPEECH TUBE

Filed Nov. 4, 1965

Sheet 1 of 2



INVENTORS  
H. W. BRYANT  
N. C. HAZELL  
L. W. MOSING  
BY *E. J. Kinder*  
ATTORNEY

Ex. App. 866

Oct. 18, 1966

D. W. FLYGSTAD ETAL

3,280,273

SELF-SUPPORTING OPERATOR'S HEADSET

Filed Sept. 11, 1963

2 Sheets-Sheet 1

FIG. 1



FIG. 2

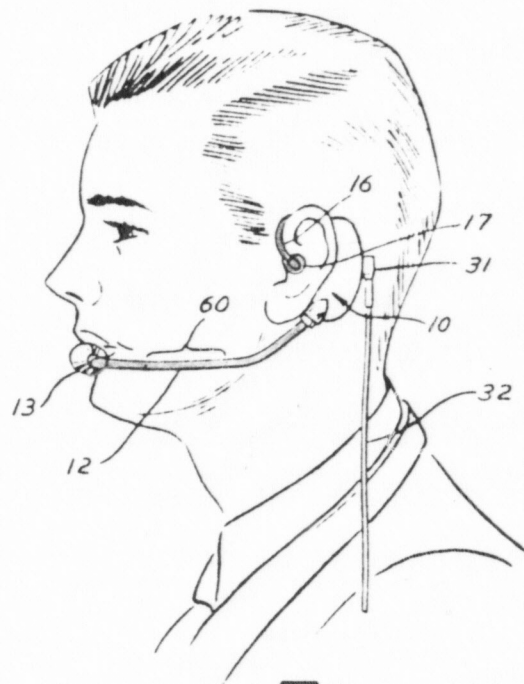


FIG. 3

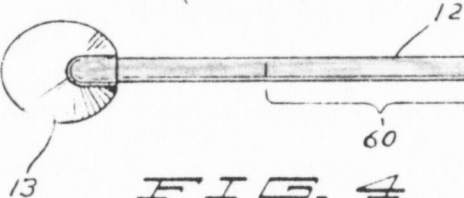
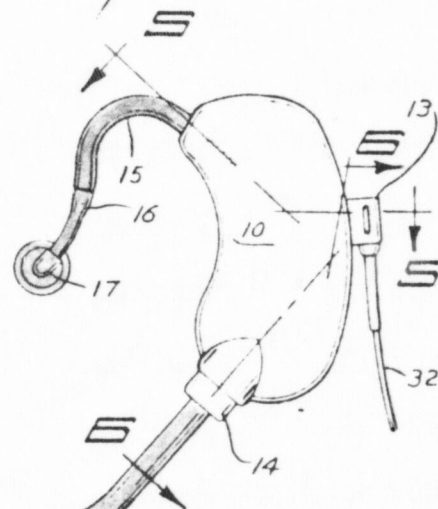
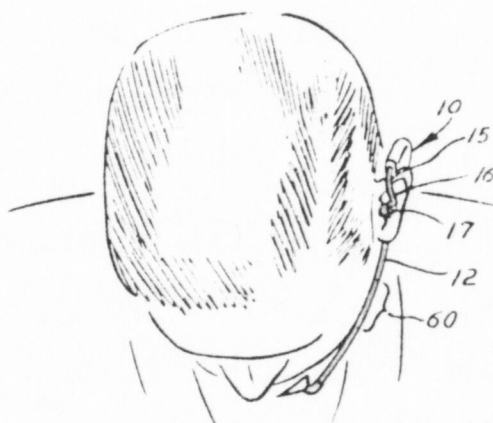
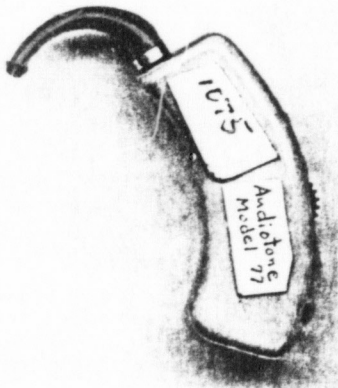


FIG. 4

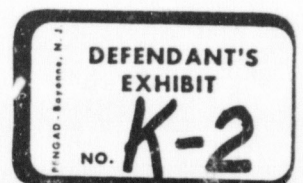
INVENTORS  
DEAN W. FLYGSTAD  
BY ROBERT L. SELL  
Carlson, Carlson & Sturm  
ATTORNEYS

Ex.App. 816

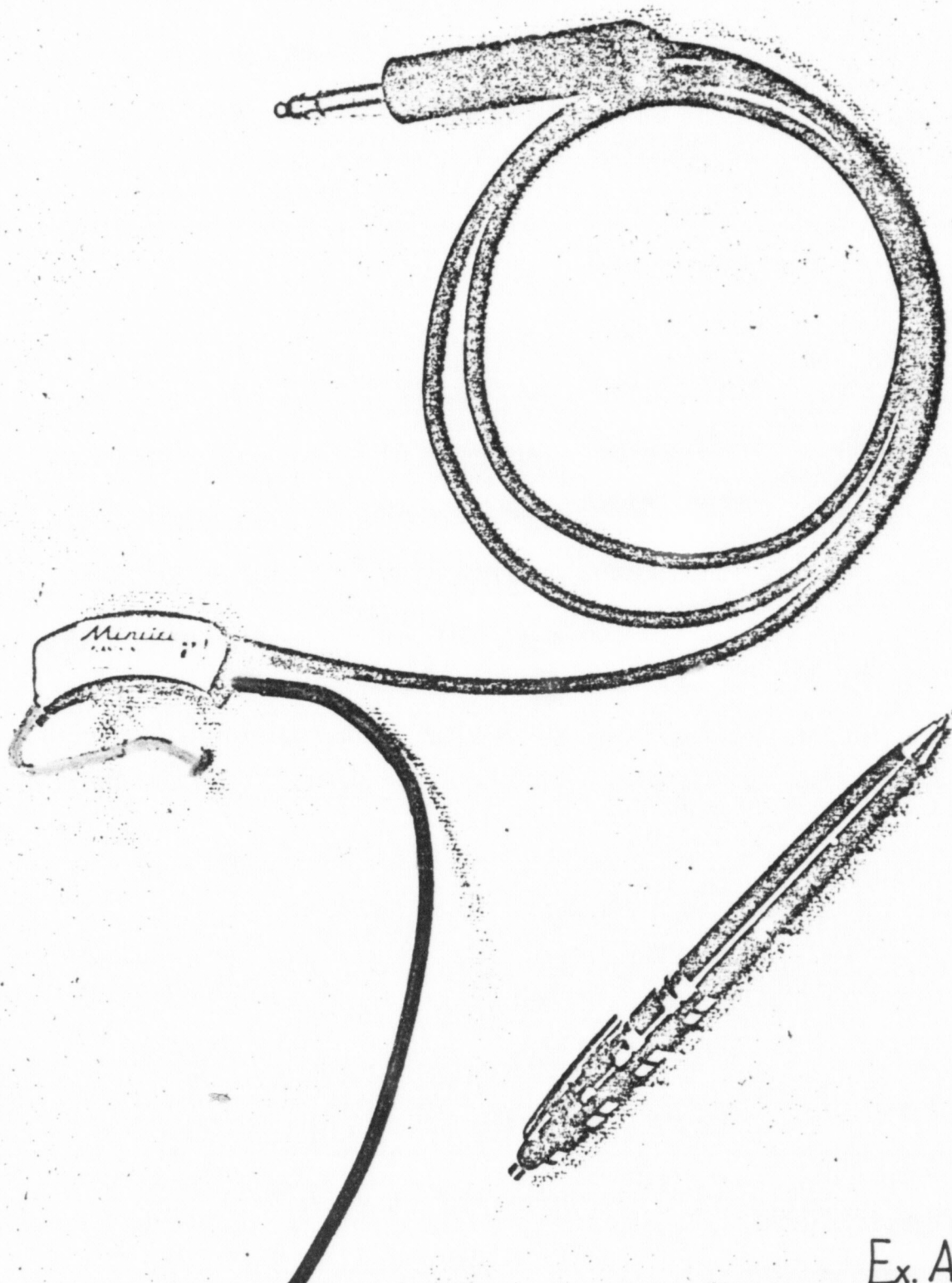


Audiotone Model 77  
Post-Auricle Hearing Aid

Ex. App. 872



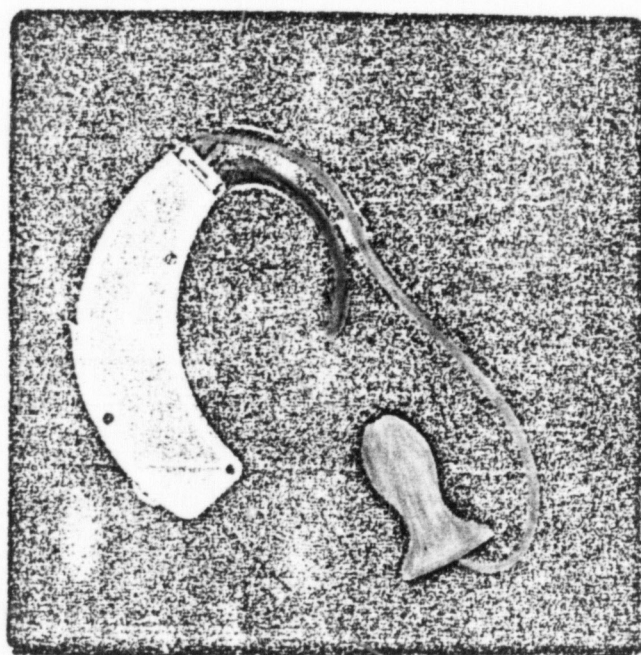




POST AURICLE MOUNTED HEADSET  
DEVELOPED MARCH 1962. REFERRED  
TO AS MS43 MODEL

Ex. App. 820

EP 4805



EP 24/3  
Oticon Hearing Aid

Ex. App. 857

# United States Patent

[11] 3,610,841

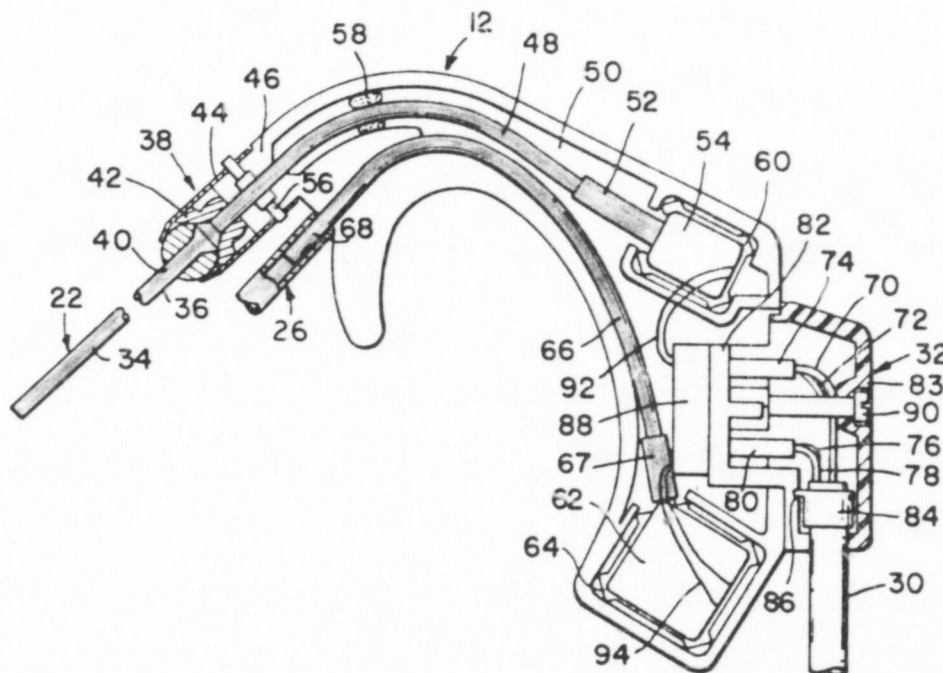
[72] Inventor Kenneth J. Hutchings  
Soquel, Calif.  
[21] Appl. No. 17,220  
[22] Filed Mar. 6, 1970  
[45] Patented Oct. 5, 1971  
[73] Assignee Pacific Plantronics, Inc.  
Santa Cruz, Calif.  
Continuation-in-part of application Ser. No.  
839,016, July 3, 1969, now Patent No.  
3,548,118.

[56] References Cited  
UNITED STATES PATENTS  
3,440,365 4/1969 Bryant et al. 179/156  
3,280,273 10/1966 Fløgstad et al. 179/156  
Primary Examiner—William C. Cooper  
Attorney—Flehr, Heilach, Test, Albritton & Herbert

[54] SELF-SUPPORTING HEADSET  
4 Claims, 3 Drawing Figs.

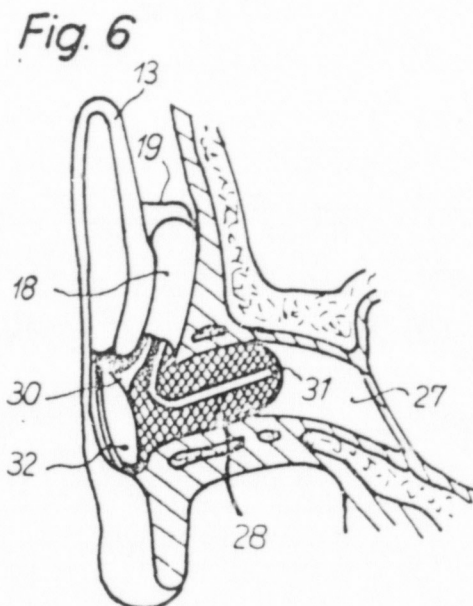
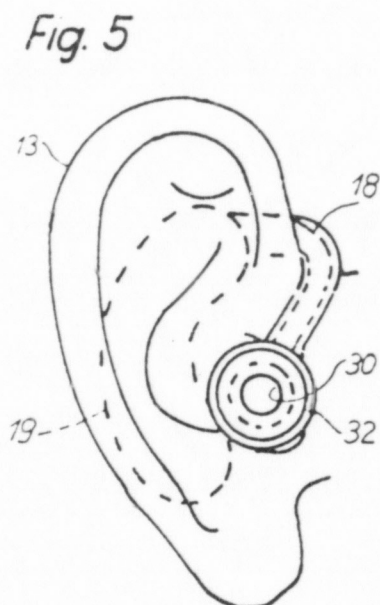
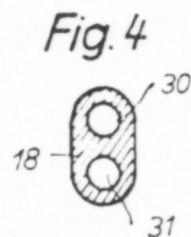
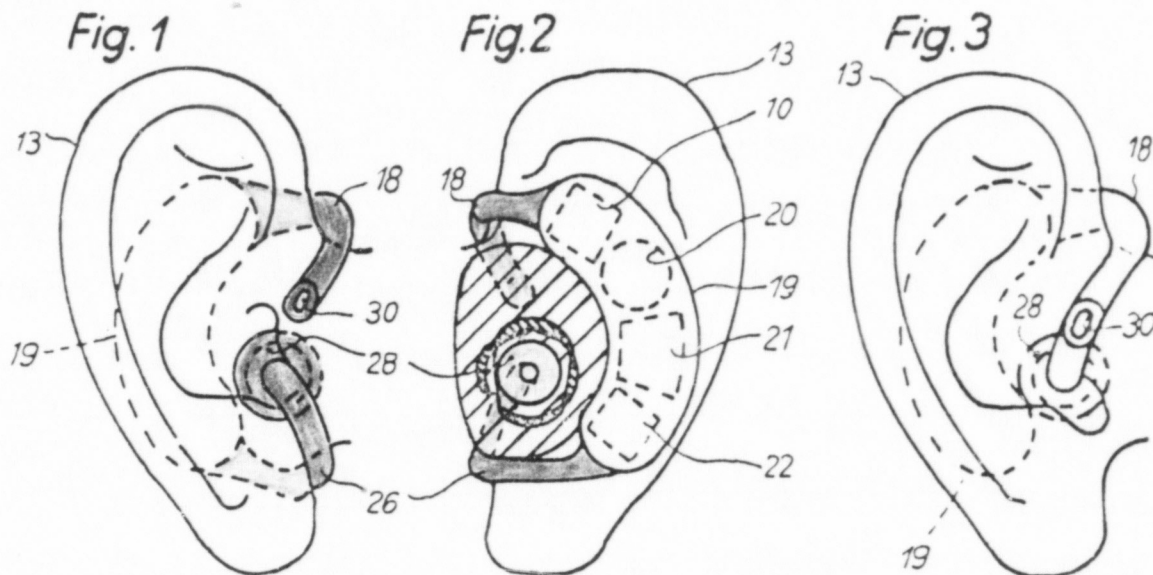
[52] U.S. Cl. 179/156  
[51] Int. Cl. H04m 1/05  
[50] Field of Search 179/156

**ABSTRACT:** A self-supporting headset is disclosed with a housing adapted to accommodate a receiver and microphone. The headset housing comfortably supports itself on the upper portion of an ear of the user. A flexible acoustic tube together with an adjustable voice tube are mounted on an upper portion of the housing forward of the user's ear. The acoustic tube curves backwardly to provide communication between the auditory canal of the user's ear and the receiver through a tube along the inner periphery of the housing. The voice tube provides communication between the user's mouth and the microphone. Electrical signals are carried to and from the microphone and receiver through a pin and socket connection together with a strain relief collar device mounting a lead wire cable to the housing.



Ex. App. 911





Ex. App. 859

May 18, 1965

W. K. LARKIN  
MINIATURE HEADSET-MICROPHONE ADAPTED  
FOR USE WITH A MASK

3,184,556

Filed Dec. 11, 1961

2 Sheets-Sheet 1

FIG. 1

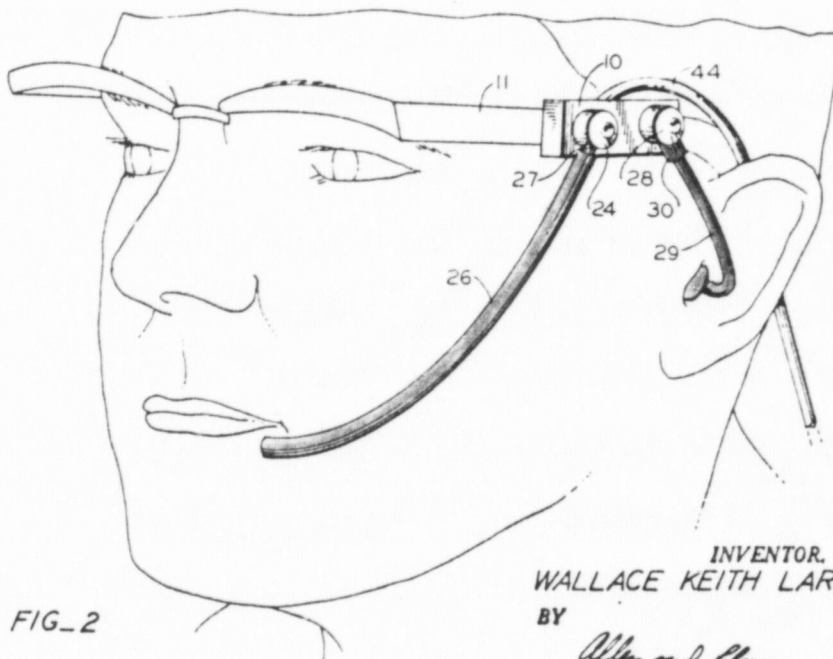
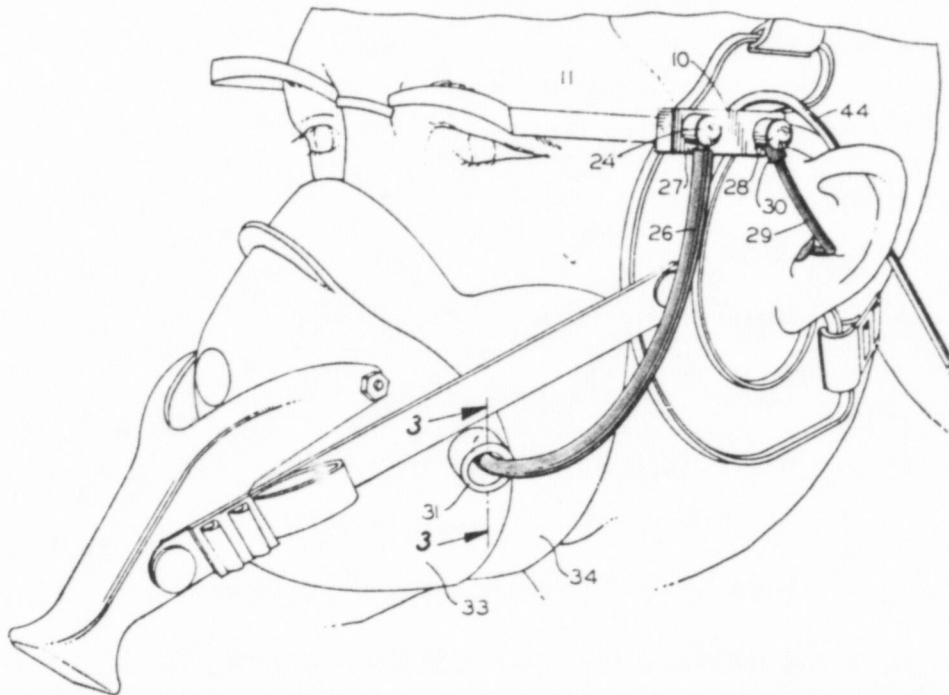


FIG. 2

INVENTOR.  
WALLACE KEITH LARKIN  
BY

*Allen and Cherry*  
ATTORNEYS

Ex. App. 2

Sept. 15, 1959

J. J. DREHER ET AL

2,004,640

COMBINATION EAR-MOUNTED MICROPHONE AND RECEIVER INSTRUMENT

Filed July 30, 1957

FIG. 3

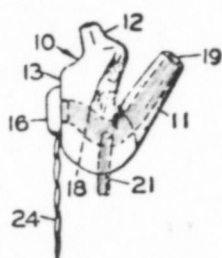


FIG. 2

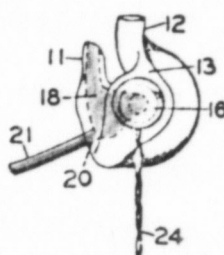


FIG. 4

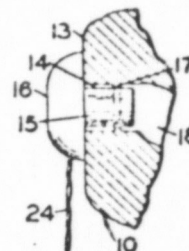


FIG. 1

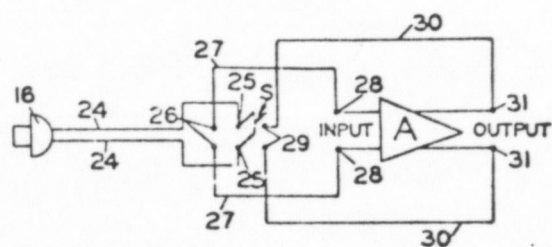
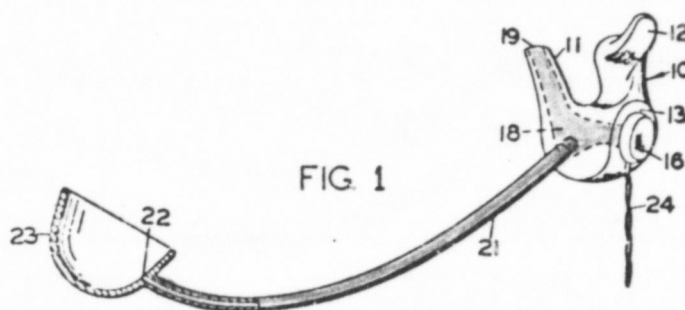


FIG. 6

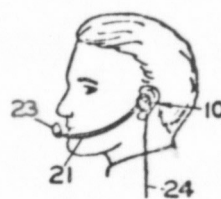


FIG. 5

INVENTORS

JOHN J. DREHER  
LEWIS J. SCHWARTZKOPF

BY

*W. S. Pauls*

ATTORNEY

Ex. App. 709



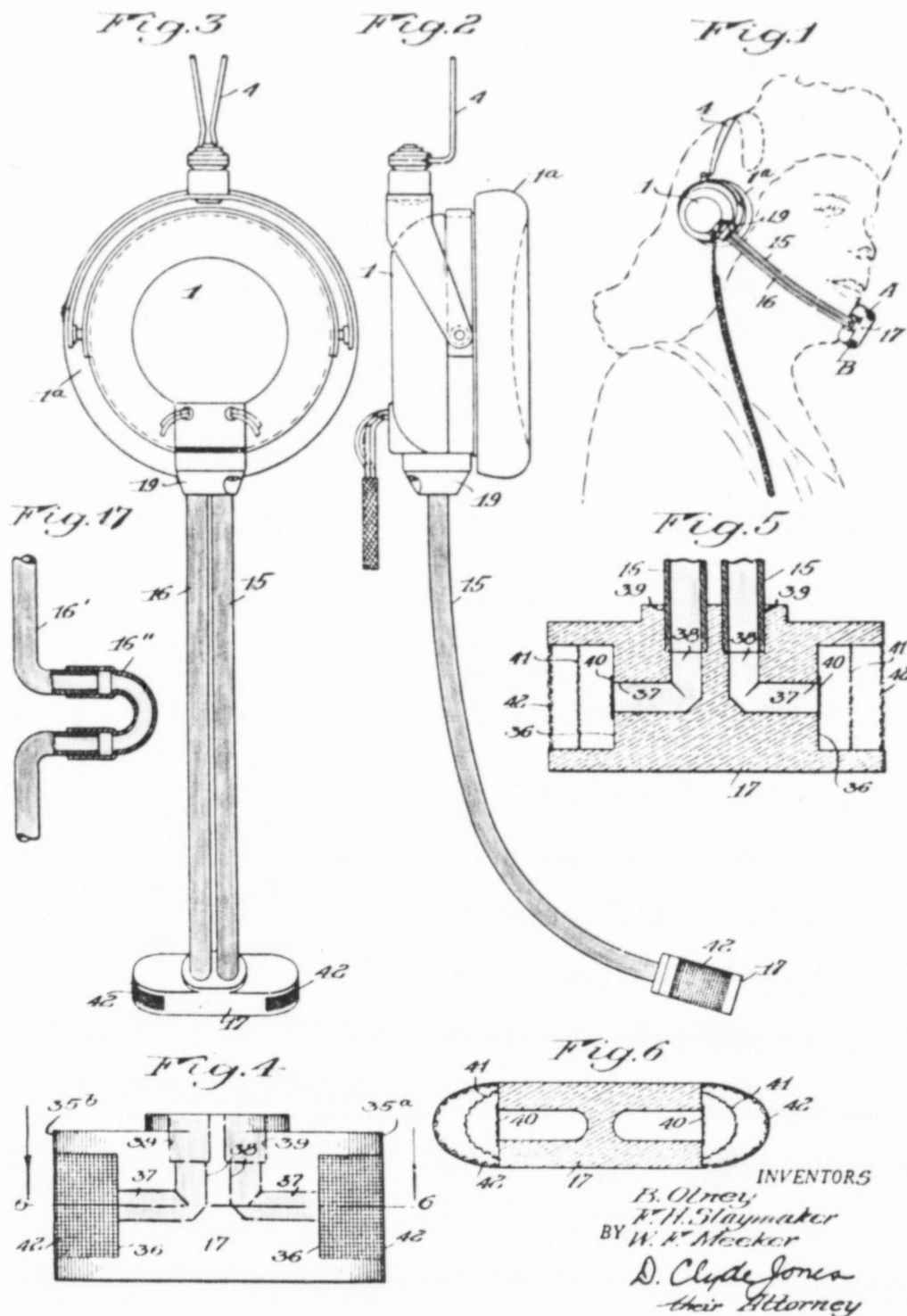
Oct. 18, 1949.

B. OLNEY ET AL  
DIPOLE MICROPHONE

2,485,405

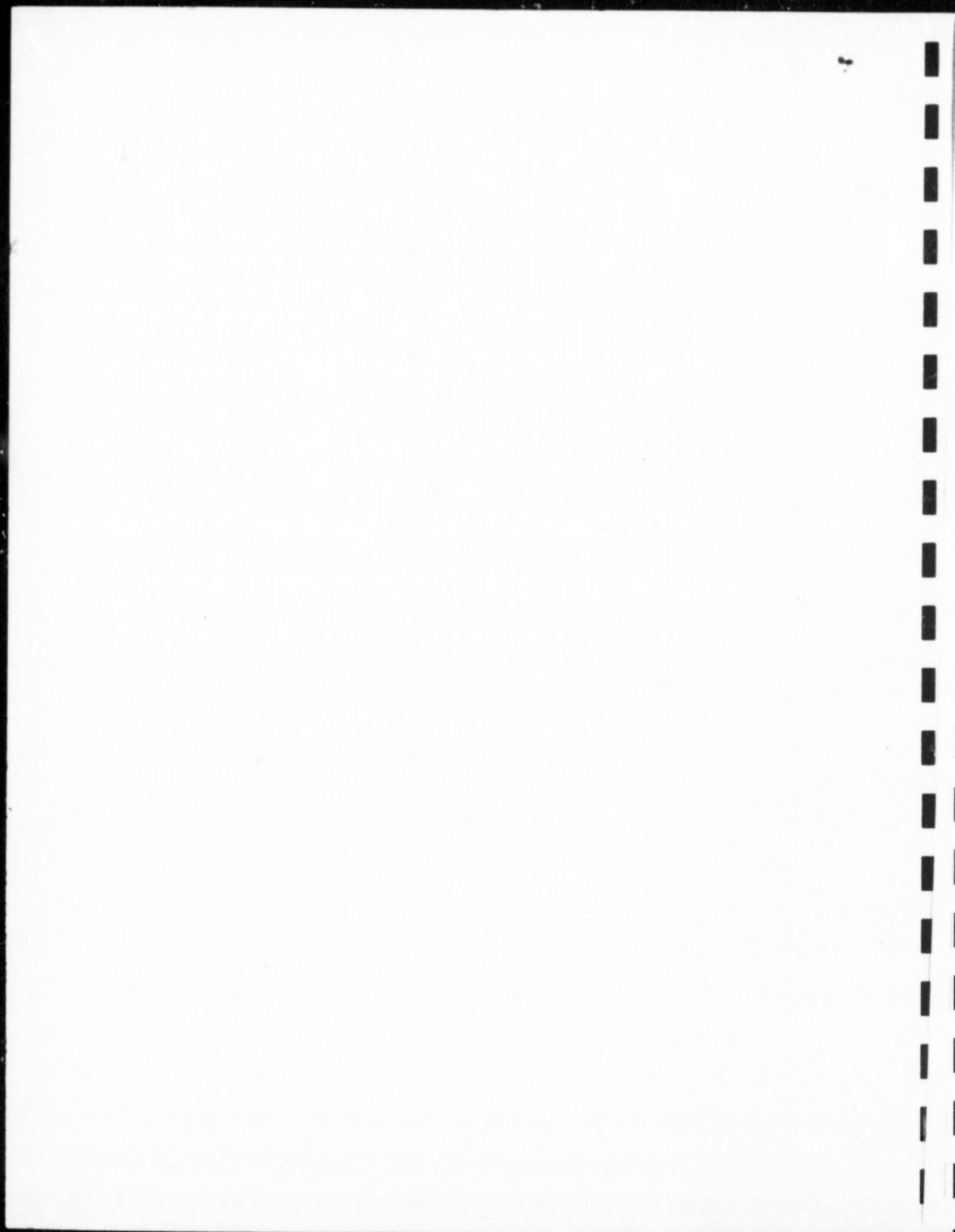
Filed April 21, 1944

6 Sheets-Sheet 1



INVENTORS  
B. Olney  
R. H. Slaymaker  
BY W. K. Meeker  
D. Clyde Jones  
their Attorney

Ex. App. 643



A. D. 1878, JAN. 15, N° 191.  
FRITCHETT'S SPECIFICATION.

(3 SHEETS)  
SHEET 1

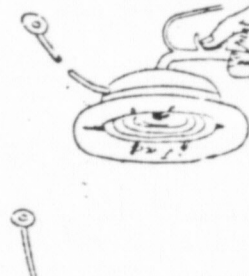


FIG. 1.

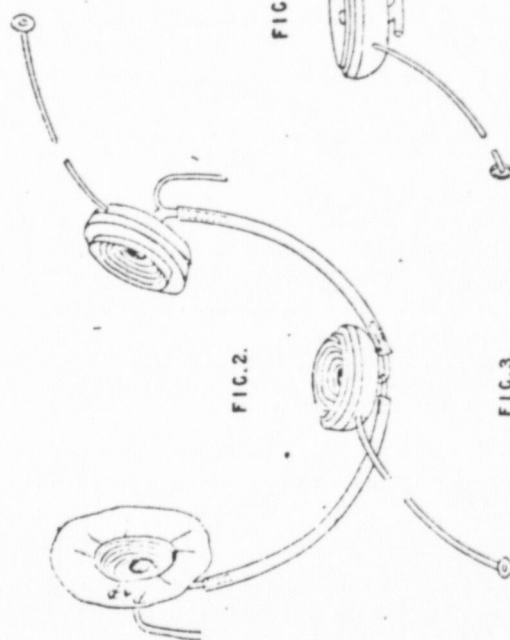


FIG. 2.

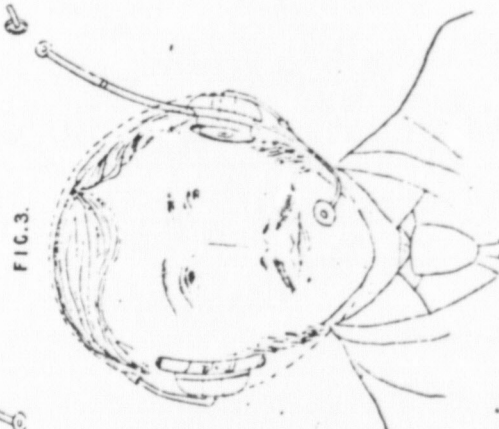


FIG. 3.

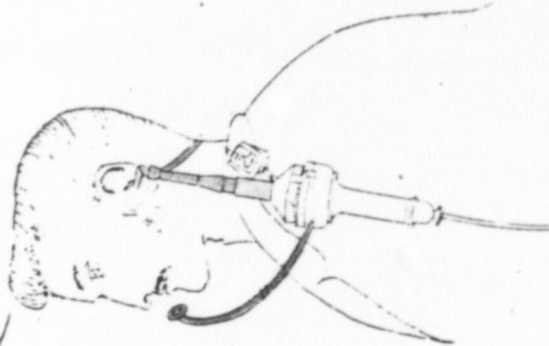
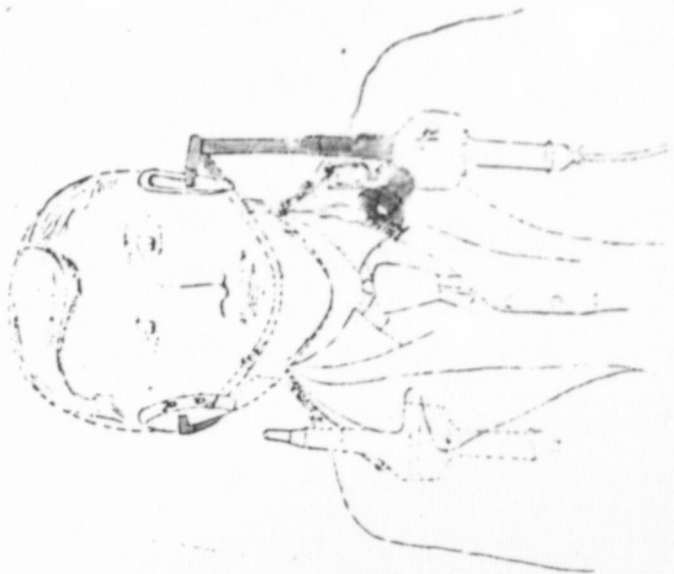


FIG. 4.



London: Printed by George Edmunds and William Beaumont, 15, Abchurch Lane, in the Strand, near Chancery Lane, 1878.

W. & A. G. S. 1878

DD

Ex. App. 634



LARKIN PATENT CLAIM CHART

LARKIN PATENT 3,184,556 (Ex.App. 2)  
(Tab AA hereof)

Pritchett British  
(Ex.App. 2)  
(Tab DD)

1. A miniaturized microphone headset

Yes. The headset utilizes a lightweight "firial" (p. 3, line 1) in place of the ear shown in Figs. 1 & 2.

employing a miniature microphone and a miniature receiver, comprising the combination of

Equivalent. A combination of a receiver located in the instrument casing shown in Fig. 3.

support means for detachably supporting the miniature microphone and the miniature receiver adjacent to the wearer's ear,

Yes. The headband 5, but shown only with a clasp clip (p. 4, line 5, lines 13-14) detachable from the microphone/receiver (or right) shoulder 6.

a first acoustical tube,

Yes. The voice tube 7, Fig. 5.

means for attaching one end of said first tube to said microphone and the other end of said first tube being adapted to be positioned adjacent to the wearer's mouth,

Yes. The voice tube 7, the microphone/receiver instrument, and the point adjacent the mouth 8.

a second acoustical tube,

Yes. The ear tube 9, colored blue in Fig. 5.

and means for attaching one end of said second tube to said receiver and the other end of said second tube being adapted to be plugged into the wearer's ear.

Yes. The ear tube 9, microphone/receiver, an eartip or "ear" 10, tends into the wearer's ear.

patent 191 of 1878  
p. 634)  
hereof)

in Fig. 5, which  
eight cartip or "ear  
ne 36; p. 4, line 52)  
arcaps or earmuffs  
to 3.

mbined microphone/  
in the telephone in-  
nown in Fig. 5.

d (used in Figs. 4 &  
in Fig. 4) and col-  
lines 42-4, 56-7, p.  
detachably support  
ceiver on the left  
er below the ear.

ube colored green in

ube is attached to  
ceiver in the tele-  
and extends to a  
e wearer's mouth.

e to the left ear,  
g. 5.

e is attached to the  
er and terminates in  
finial" which ex-  
arer's ear.

Dreher et al patent 2,904,640  
(Ex.App. 709)  
(Tab BB hereof)

Yes. Figs. 1 to 5 show "a structur-  
ally simple lightweight" earmold-  
mounted headset. (col. 1, lines  
43-8)

Equivalent. A microphone/receiver  
16 of the button-like hearing aid  
type. (col. 2, lines 62-3)

Yes. A custom or standard earmold  
or ear plug 10, or just the forward  
retaining finger 12. (col. 2, lines  
47-52)

Yes. The "small-diametered" voice  
tube 21 colored green (col. 3, line  
5), one sample of which was measured  
to have an inside diameter of 75  
mils. (App. 812-4)

Yes. The voice tube 21 is attached  
to the microphone/receiver 16 and  
terminates "adjacent the lips of the  
wearer". (col. 3, lines 8-9)

Yes. The internal passage 18 through  
the earmold to the end of the "pipe-  
like extension 11". (col. 2, line  
54)

Yes. One end of the passage 18 is  
attached to the microphone/receiver  
16, by stem portion 15 and the en-  
gaging ring 17 in socket 14, while  
the opposite end extends into the  
wearer's ear.

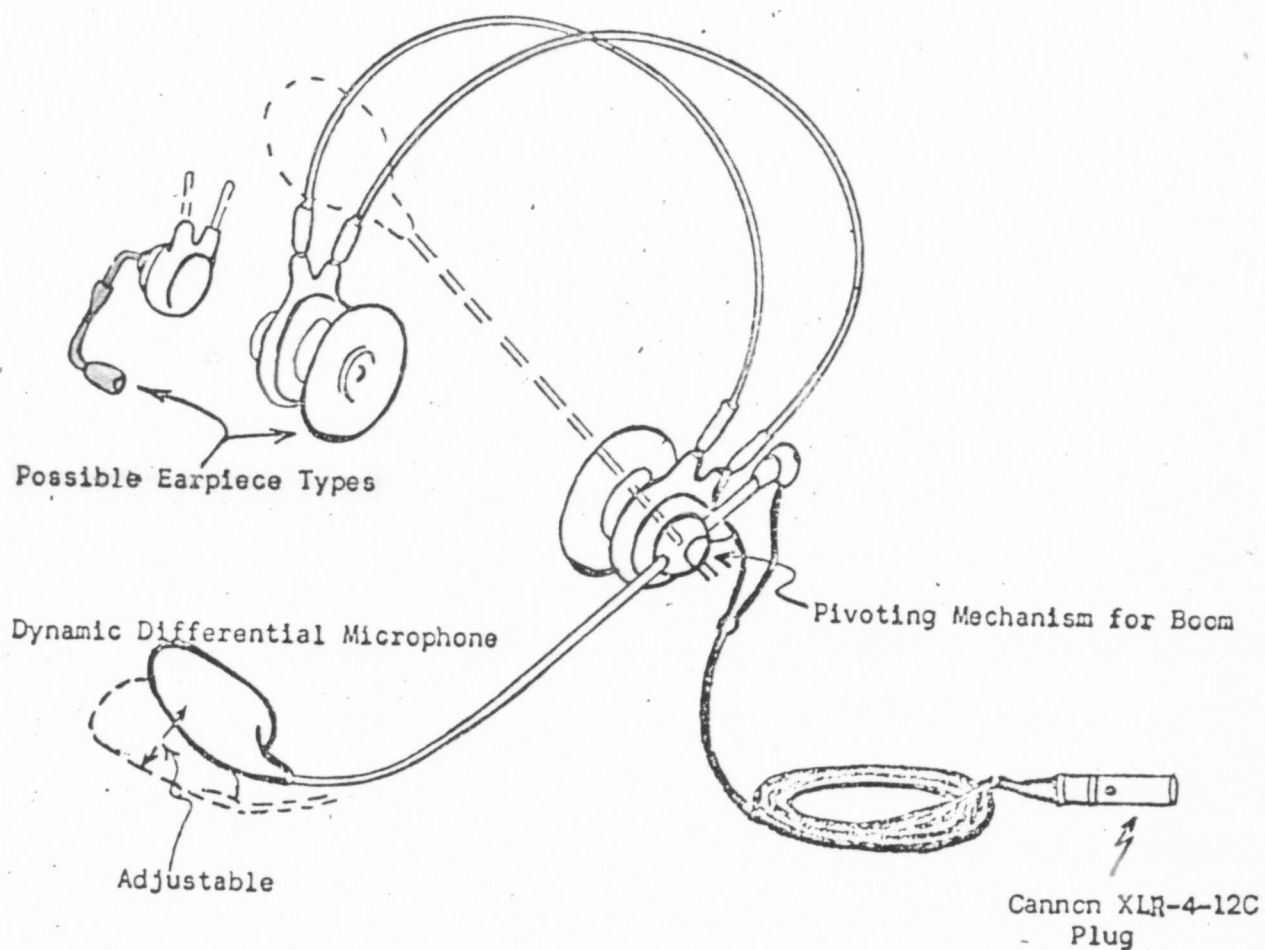
EE





March 25, 1957

ATTACHMENT I



One Possible Arrangement for  
Light-Weight Headset and Boom  
Microphone

LARKIN PATENT 3,184,556 (  
(Tab AA hereof)

1. A miniaturized microphone headset

miniature microphone and a miniature r  
prising the combination of

support means for  
supporting the miniature microphone and t  
receiver adjacent to the wearer's ear,

a first acoustical tube,

means for attaching one end of said  
said microphone and the other end of said first  
adapted to be positioned adjacent to the wear

a second acoustical tube,

and means for att  
end of said second tube to said receiver and the  
of said second tube being adapted to be plugg  
wearer's ear.

LARKIN PATENT CLAIM CHART

Ex.App. 2)

Olney et al patent 2,485,405  
(Ex.App. 643) with ARINC  
Characteristic No. 535 (Ex.App. 680)  
(Tabs CC & FF hereof)

Yes. Olney Figs. 1 to 3.

employing a  
receiver, com-

Yes. The microphone 2 and receiver  
3 are both made "small" so that both  
can be enclosed within a casing 1  
adjacent the ear. (col. 1, lines  
15-18; col. 5, lines 33-4)

or detachably  
the miniature

Yes. Headband 4 detachably supports  
the mike and receiver "adjacent the  
ear of the user". (col. 14, lines  
8-9)

Yes. One of the green colored voice  
tubes 15 or 16 (col. 10, lines 57-73)

first tube to  
tube being  
er's mouth,

Yes. The voice tube is attached to  
the microphone 2 and extends to a  
point "adjacent the operator's  
mouth". (col. 4, line 4)

Yes. Ear tubes and earcaps, such as  
shown in the Olney headset, are ex-  
pressly shown as alternatives in  
lightweight headsets on p. 8 of the  
ARINC publication. (Ex.App. 690)

aching one  
e other end  
ed into the

Yes. The ARINC ear tube (colored  
blue) is attached to the receiver  
and extends into the wearer's ear.

Telex Boom-Mike Headset  
(Ex.App. 676A) with  
British patent 716,801 (Ex.App. 749)  
(Tabs HH & II hereof)

Yes. The Telex boom-mike headset is  
said to weigh 3-1/2 ounces.

Yes. There is a miniature mike at  
the end of the boom and a miniature  
receiver in the housing adjacent the  
ear.

Yes. The Telex headband detachably  
supports the receiver adjacent the  
ear, and the British '801 patent  
(p. 2, lines 85-99) teaches that  
the boom mike should be replaced by  
a mike adjacent the receiver and a  
voice tube.

Yes. The voice tube colored green  
in the British '801 patent, said to  
have a bore diameter of 3/16" (p. 3,  
lines 23-4).

Yes. The voice tube of the British  
'801 patent is so attached.

Yes. An ear tube (colored blue) in  
the Telex boom-mike headset.

Yes. The ear tube is so attached.

GG

HH





**BOOM-MIKE HEADSET** This lightweight, 3½-ounce, two-way headset is ideally suited to airline, ham radio, television, ship-to-shore and switchboard use. Parallel connected 500-ohm receivers are mounted on stainless spring-steel headband. Adjustable tone arms transmit sound directly to ears—no heavy, sweaty cans. Mike is mounted in shock absorbing tenite at end of fully adjustable boom—angled for best pickup. Choice of general purpose 50 ohm carbon mike (output 30 db above 1MV) or 256-ohm noise cancelling differential magnetic mike (output—85 db below 1 Volt/Microbar).

BE SURE TO ORDER BY CATALOG NUMBER

Stock Number		Catalog Number	
18260	Headset w/double receivers & 5' cord w/terminal clips less plug.....	Carbon Mike	
18250	Headset w/single receivers & cord as above.....	BCW-12	
18240	Headset w/no receivers, mike only & cord as above.....	BCW-11	
18230	TV type headset w/double receivers, split phone & cord as above.....	BCO-1	
18200	Headset w/double receivers, no cord.....	BCW-13	
18220	Headset w/single receiver, no cord.....	BCW-02	
18235	Headset—split phone, no cord.....	BCW-01	
Lugs	Cord unit w/term. packed separately, no plug.....	BCW-03	
9261	Aircraft-type cord w/PL-55 and PL-68 or equiv.....	CME-1	
12061	Aircraft-type cord w/push-to-talk switch.....	CME-5	
9262	Standard cord w/PL-68 or equiv.....	CME-3	
Lugs	Switchboard-type cord w/standard plug.....	CME-2	
	"Y" cord, 6 conductor, for headset #18235 w/term. packed separately, no plug.....	CME-4	
	3280-22 *Cord unit for receivers for noise cancelling mike equipped headsets (order plug separately).....	CME-96	
		CMM-1	

Catalog Number  
Noise  
Cancelling Mike  
BMW-12  
BMW-11  
BMO-1  
BMW-13  
Not Available



**MONOSET®** Here's the ORIGINAL under-chin, lightweight headset. Ideal for listening systems, business machines, radio and record listening, broadcasting, and nearly any other application. Weighing only 1.2 oz., it is complete with 5' cord and standard phone plug. Sensitivity is 88 db above .0002 dynes per sq. cm. for 10 microwatts input. Frequency response: 100 to 6500 cycles.

Stock Number	Catalog Number
#18183—MONOSET, 128 ohm, complete, std. cord.....	HMV-2
#18184—MONOSET, 2000 ohm, complete, std. cord.....	HMV-2
#18185—MONOSET, 128 ohm, with volume control cord.....	HMV-7
#18186—MONOSET, 2000 ohm, with volume control cord.....	HMV-7
#18110—MONOSET, 128 ohm, NO CORD.....	HMV-01
#18165—MONOSET, 2000 ohm, NO CORD.....	HMV-01
# 9241—CORD, Standard (for metal monoset).....	CMT-2
# 3280—CORD, Standard (for plastic monoset).....	CMM-2



**TWINSET®** Perfect for amateur, commercial, and industrial communications, the Twinset is CAA approved and is standard equipment on airlines and private planes. Comfort replaces listening fatigue. Adjustable tone arms pipe sound into ears, blocking out background noise, yet ear-tips need not even touch user's ear. Weighs 1.6 oz. and has 5' cord and standard phone plug. Special cord with built-in miniature volume control also available.

Sensitivity is 101 db above .0002 dynes per sq. cm. for 10 microwatts input.

Stock Number	Catalog Number
#3791—TWINSET, 64 ohm imp, complete, std. cord.....	HTL-2
#3775—TWINSET, 1000 ohm imp, complete (CAA app.), std. cord.....	HTX-2
#3781—TWINSET, 64 ohm imp. LESS CORD.....	HTL-01
#3776—TWINSET, 1000 ohm imp. LESS CORD (CAA app.).....	HTX-01
#2846—Volume Control Cord, 64 ohm imp.....	VVM-2
#2845—Volume Control Cord, 1000 ohm imp.....	VXM-2

Ex. App. 676A

side, in the region of the junction between two segments.

To allow the maximum flexibility, the internal bores of the segments may be widened at one or both ends as shown at 9.

The greater the tension of the spring 8, the greater the friction between nesting faces of adjacent segments and the better does the duct retain the shape into which it is bent.

Fig. 2 shows a part of a segmented duct using axially shorter segments which enable smoother bends to be made. Corresponding items in the figure and in Figs. 1 and 3 are given the same reference numerals.

In Fig. 3 segments even shorter than those of Fig. 2 are shown and in addition each segment has a circumferential rib 10 at the concave end which stiffens this end to resist any tendency for it to open out under the endwise pressure of the spring forcing the convex end of the adjacent segment into it. The rib also limits the bending movement of segments relative to one another which has certain advantages when sharp bends are made since any tendency for one pair of segments to take more than its fair share of the angular displacement is resisted.

The shorter the segments, the less tendency there is to trap the spring and the opening of the ends of the bores of the segments may be omitted. As there is also less tendency for the trapping of the spring to limit the relative movement of the segments, it is sometimes necessary to have ribs such as 10, for this reason alone.

The relative movement of segments must not be allowed to reach the point at which the bore of one segment is uncovered by the adjacent segment allowing the duct to leak to the surrounding air.

In Fig. 3 the spring 7 is shown in outline only by parallel dotted lines 7'.

The acoustic characteristics of acoustic ducts are such that sounds passing down them are subjected to amplitude frequency distortion, that is to say some frequencies are boosted and others attenuated. This effect grows with a shortening of the duct and *vice versa*.

When, for any length of duct, this distortion cannot be tolerated it may be considerably minimised by introducing acoustic resistance into the duct.

When ordinary flexible stay-put tubing is used for the duct, resistance may be introduced into the bore in a variety of ways such as packing with wadding or inserting a roll of fine gauze. If wire gauze is used the flexibility of the tube is somewhat impaired and the gauze must be

placed where sharp bends are not required.

It has been found in the case of segmented ducts of the type shown in Figs. 1, 2 and 3, that this resistance can be furnished by the spring 7 if it is of the correct form.

The best results are obtained if the spring is smaller in over-all diameter than the internal bore of the segments so that air waves pass along the spring inside and outside. The closer the coils of the spring, the greater the resistance so long as they are not actually touching one another. The resistance is caused by skin friction of the air in passing over the surface of the spring coils and anything which increases the area of this surface increases the acoustic resistance.

It is known, in an operator's headset to use a miniature microphone mounted on an adjustable boom secured to the receiver or to the end of the head harness opposite to the one to which the receiver is secured. It is difficult with this arrangement to avoid disturbing the adjustment of the boom when the head is moved due to the inertia of the microphone.

It is now proposed to fix the microphone to the head harness and extend the sound inlet by means of a flexible duct terminating in a flare opposite the mouth. Fig. 4 shows this arrangement with a segmented duct.

The duct must be flexible so that it can be adjusted to suit the individual operator and it must be of the "stay-put" type so that it will retain its adjustment. Unless the duct is made of light weight materials, it is liable to lose its adjustment in the same way as the boom-mounted microphone, when the head is moved. Most commercial flexible metallic tubing of the stay-put type is apt to be objectionable on this score and a special lightweight tubing should be used. On the other hand a segmented duct made in the manner described above can be made very light especially if suitable materials are used. Polyethylene has been used successfully.

In an operator's headset of this type the amplitude/frequency distortion due to the duct may be damped as mentioned above by the introduction of wadding, gauze of the like into the duct, if it is of ordinary flexible tubing, but if a segmented duct of the types described, is used adequate damping is provided by the presence of the tensioning spring. For some requirements additional damping may be necessary and it could be introduced into the air passages of the microphone with which the duct communicates. A roll of fine wire gauze answers this purpose well







UNITED STATES COURT OF APPEALS

FOR THE SECOND CIRCUIT

No. 75-7621

No. 75-7645

PLANTRONICS, INC.,

Plaintiff-Appellant  
and Cross-Appellee,

v.

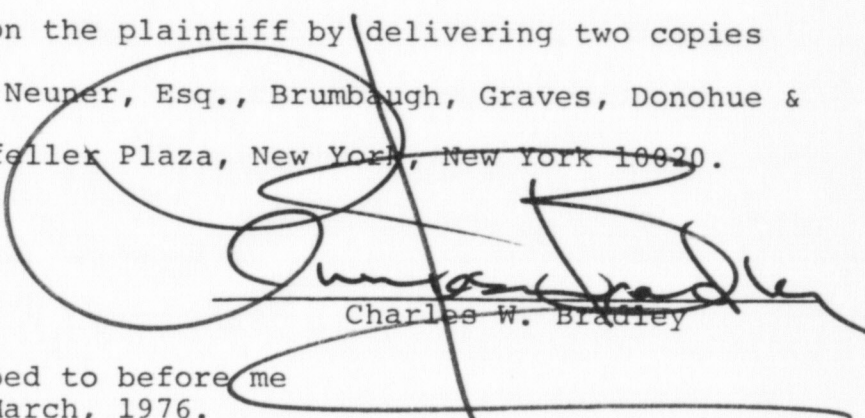
ROANWELL CORPORATION,

Defendant-Appellee  
and Cross-Appellant.

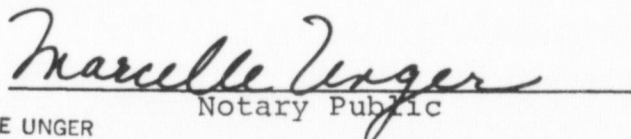
Appeal From The United States District Court  
For the Southern District of New York

AFFIDAVIT OF SERVICE

CHARLES W. BRADLEY, being duly sworn, deposes and says  
that the foregoing BRIEF FOR APPELLEE ROANWELL CORPORATION  
was today served on the plaintiff by delivering two copies  
thereof to Robert Neuner, Esq., Brumbaugh, Graves, Donohue &  
Raymond, 30 Rockefeller Plaza, New York, New York 10020.

  
Charles W. Bradley

Sworn and subscribed to before me  
this 16th day of March, 1976.

  
Notary Public

MARCELLE UNGER  
NOTARY PUBLIC, State of New York  
No. 24-4520181 - Qual. in Kings Co.  
Certificate filed in New York County  
Commission Expires March 30, 1976